PRINT SYSTEM AND METHOD THEREFOR, AND RECORDING MEDIUM RECORDING PRINT CONTROL PROGRAM

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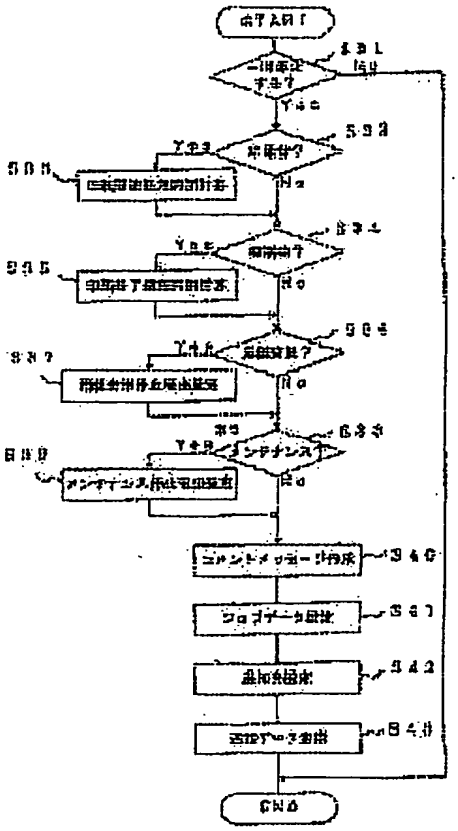
Abstract of **JP 11110154 (A)**

PROBLEM TO BE SOLVED: To provide a print system where a user previously sets the discontinuation of a print operation in a print process mode and this set state of the print operation is notified with a prescribed timing. SOLUTION: If the set data received from a user show the discontinuation of a print operation (S31; Yes), it is judged whether the discontinuation of the print is carried out before or after the print operation (S32, S34) and each corresponding notification time is calculated (S33, S35). Then, the reason is judged for the discontinuation of the print operation (S36, S38), and the corresponding reason of the print discontinuation is set (S37, S39). A comment message is produced (S40), the job data are set (S41) and the notifying destination is set (S42). Finally, a produced notification message is registered (S43) and a notification process is waited for.



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CLAIMS

[Claim(s)]
[Claim 1]A printing system comprising provided with a printing job means which carries out the printing job of the print data which should be printed:
A directing means which directs timing which notifies of a stop of the print operation concerned while directing beforehand a stop of print operation of said printing job means on the occasion of a printing demand of said print data at the time of a start of a printing job of the print data concerned, or an end.
An announcement means which notifies of a stop of the print operation concerned to timing directed by said directing means.

[Claim 2]A memory measure which memorizes information required in order to calculate time taken to carry out the printing job of said print data, A printing time prediction means which predicts printing time which is the time which said printing job takes from said information memorized and a state of said printing job means by calculation, Further, while having a notice time calculating means which computes notice time which should notify of a stop of said print operation based on timing directed by said predicted printing time and said directing means, The printing system according to claim 1, wherein said announcement means notifies of a stop of said print operation in said computed notice time.
[Claim 3]The printing system according to claim 1 or 2, wherein said announcement means both notifies via said network that it is characterized by comprising the following of a stop of said print operation to said directed partner point.
Two or more client apparatus with which said printing system generates said print data.
A printer which prints said print data is the system connected by a network, and said directing means, A user of a specific client apparatus which pointed to the partner point which should notify of a stop of said print operation beforehand, and was connected to the partner point concerned by said network or an administrator of said network.

[Claim 4]From claim 1 while said directing means directs beforehand further a reason for a stop of said print operation of which it should notify, wherein it faces said announcement means notifying of a stop of said print operation and it notifies of a reason for said directed stop collectively to the printing system according to claim 3
[Claim 5]A printing method characterized by comprising the following in a printing system provided with a printing job means which carries out the printing job of the print data which should be printed.
An instruction process which directs timing which notifies of a stop of the print operation concerned while directing beforehand a stop of print operation of said printing job means on the occasion of a printing demand of said print data at the time of a start of a printing job of the print data concerned, or an end.
A notice process of notifying of a stop of the print operation concerned to timing directed in said instruction process.

[Claim 6]A memory process of memorizing information required in order to calculate time taken to carry out the printing job of said print data, A printing time prediction process of predicting printing time which is the time which said printing job takes from said information memorized and a state of said printing job means by calculation, Further, while having a notice time calculating process which computes notice time which should notify of a stop of said print operation based on timing directed in said predicted printing time and said instruction process, The printing method according to claim 5, wherein said notice process notifies of a stop of said print operation in said computed notice time.
[Claim 7]The printing method according to claim 5 or 6, wherein said notice process both notifies via said network that it is characterized by comprising the following of a stop of said print operation to said directed partner point.
Two or more client apparatus with which said printing method generates said print data.
A printer which prints said print data is a printing method in a system connected by a network, and said instruction process, A user of a specific client apparatus which pointed to the partner point which should notify of a stop of said print operation beforehand, and was connected to the partner point concerned by said network or an administrator of said network.

[Claim 8]From claim 5 while said instruction process directs beforehand further a reason for a stop of said print operation of which it should notify, wherein it faces said notice process notifying of a stop of said print operation and it notifies of a reason for said directed stop collectively to the printing method according to claim 7
[Claim 9]A computer contained in a printing system provided with a printing job means which carries out the printing job of the print data which should be printed, While directing beforehand a stop of print operation of said printing job means on the occasion of a printing demand of said print data at the time of a start of a printing job of the print data concerned, or an end, A recording medium with which a printing control program considering it as an announcement means which notifies of a stop of the print operation concerned, and making it function to timing directed by directing means which directs timing which notifies of a stop of the print operation concerned, and said directing means was recorded.
[Claim 10]A memory measure which memorizes information required in order to calculate time which takes said computer to carry out the printing job of said print data, A printing time prediction means which predicts printing time which is the time which said printing job takes from said information memorized and a state of said printing job means by calculation, And while considering it as a notice time calculating means which computes notice time which should notify of a stop of said print operation based on timing directed by said predicted printing time and said directing means and making it function further, A storage with which the printing control program according to claim 9, wherein said announcement means notifies of a stop of said print operation in said computed notice time was memorized.
[Claim 11]A storage with which the printing control program according to claim 9 or 10, wherein said announcement means both notifies via said network that it is characterized by comprising the following of a stop of said print operation to said directed partner point was recorded.
Two or more client apparatus with which said printing system generates said print data.
A printer which prints said print data is the system connected by a network, and said directing means, A user of a specific client apparatus which pointed to the partner point which should notify of a stop of said print operation beforehand, and was connected to the partner point concerned by said network or an administrator of said network.

[Claim 12]While said directing means directs beforehand further a reason for a stop of said print operation of which it should notify, said announcement means, A storage with which the printing control program according to claim 11 was recorded from claim 9 facing notifying of a stop of said print operation, and notifying of a reason for said directed stop collectively.

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DETAILED DESCRIPTION

[Detailed Description of the Invention]
[0001]
[Field of the Invention]On the occasion of a printing job, a user points to the stop of print operation beforehand, and this invention belongs to the technical field of the recording medium which recorded the printing system, printing method, and printing control program which notify a user of the stop of print operation to predetermined timing.
[0002]
[Description of the Prior Art]Conventionally, in a printing system, the printing system which performs a printing job one by one is common, two or more users sharing and using a printer via a network etc. from a viewpoint of effective use of resources, and managing the print data from each user by the executive unit called a print job. Usually at such a printing system, printing with a printer is performed only by the operation from a computer terminal, without troubling each user.
[0003]By the way, since the gestalt of printing is various, when printing, for example on a special paper, it may be necessary to perform with a printer the situation where it cannot respond but sheet replacing etc. must be worked themselves [user], and the maintenance of a printer. In this case, in order that a user may go to the installation place of a printer and may work sheet replacing, a maintenance, etc., when its printing job is performed, it is necessary [it] to once stop a working printer. And operating a printer again and making a printing job resume after completing necessary work is often performed.
[0004]
[Problem(s) to be Solved by the Invention]However, in the above-mentioned conventional printing system, in order to do work which the specific user mentioned above, when stopping a printer manually has many users in the printing waiting of a print job, there is the following trouble. Namely, it cannot be judged when the print job of the user who is going to stop a printer is started, After requesting to wait after going to the installation place of a printer, or to have you wait for printing to other users, it is not an easy thing anyway for which a stop is operated and which must be able to lend.
[0005]Since there is also a thing which can set up a halt command depending on a printer, using such a model is also considered, but when a printer is stopped by a halt command, the timing of the stop cannot be judged too. Therefore, the situation neglected while the printer had been suspended will arise and a great trouble will attain to the following user who waits for the turn of a print job.
[0006]As mentioned above, in the conventional printing system, there was a problem in that it cannot be coped with appropriately to the necessity of stopping a printer from the request of a user's operation etc.
[0007]Then, by having made this invention in view of the aforementioned problem, and pointing to a stop of a printer beforehand when printing a user, and also notifying a stop of a printer in desired timing, Let it be a technical problem to provide the recording medium which recorded the printing system with a user able to do easily operation proper at the time of a printer stop, and work, the printing method, and the printing control program.

[0008]
[Means for Solving the Problem]In order to solve the above-mentioned technical problem, the printing system according to claim 1, In a printing system provided with a printing job means which carries out the printing job of the print data which should be printed, While directing beforehand a stop of print operation of said printing job means on the occasion of a printing demand of said print data at the time of a start of a printing job of the print data concerned, or an end, It is considered as the having-directing means [which directs timing which notifies of a stop of the print operation concerned], and announcement means which notifies of stop of print operation concerned to timing directed by said directing means feature.
[0009]According to the printing system according to claim 1, timing which directions are beforehand carried out by directing means and notifies of the stop collectively in the case of a printing demand of print data in order to suspend print operation of a printing job means when a printing job of the print data concerned is begun or completed is also directed. And if timing of which it should notify comes, it will be notified of a stop of print operation by announcement means. Therefore, while print operation stops without operation at the time of print data actually being printed automatically, a user is made to recognize that print operation stopped in desired timing.
[0010]In the printing system according to claim 1 the printing system according to claim 2, A memory measure which memorizes information required in order to calculate time taken to carry out the printing job of said print data, A printing time prediction means which predicts printing time which is the time which said printing job takes from said information memorized and a state of said printing job means by calculation, Based on timing directed by said predicted printing time and said directing means, a notice time calculating means which computes notice time which should notify of a stop of said print operation further, While having, said announcement means notifies of a stop of said print operation in said computed notice time.
[0011]According to the printing system according to claim 2, a predicted value of printing time which a printing job takes by a printing time prediction means is beforehand calculated from information memorized by memory measure and a state of a printing job means. And if this notice time comes while notice time of a stop of print operation is computed by notice time calculating means based on timing which was instructed to be a predicted value of this printing time and of which it should notify, it will be notified of a stop of print operation by announcement means. Therefore, printing time is actually specified before a printing job start, and a user is made to recognize that print operation stopped in timing of a request on the basis of the printing time.
[0012]In the printing system according to claim 1 or 2, the printing system according to claim 3 said printing system, Two or more client apparatus which generate said print data, and a printer which prints said print data are the systems connected by a network, and said directing means, While pointing to the partner point which should notify of a stop of said print operation beforehand and including a user of a specific client apparatus connected by said network, or an administrator of said network in the partner point concerned, Said announcement means notifies of a stop of said print operation via said network to said directed partner point.
[0013]A user of a specific client apparatus which was connected to a network according to the printing system according to claim 3, Or the partner point including a network administrator is beforehand directed by a directing means as the partner point of which it should notify, and it is notified of a stop of print operation by announcement means via a network to this partner point. Therefore, it is made to recognize also not only to a real user but to other users on a network and a network administrator that print operation stopped.
[0014]In the printing system according to claim 3, the printing system according to claim 4 from claim 1 said directing means, While directing beforehand a reason for a stop of said print operation of which it should notify, said announcement means is faced notifying of a stop of said print operation, and notifies of a reason for said directed stop collectively.
[0015]According to the printing system according to claim 4, a reason for a stop of print operation is beforehand directed by a directing means, and it is collectively notified of a reason for the stop concerned by announcement means in the case of a notice of a stop of print

operation. Therefore, it is made to recognize to a user etc. with a cause of the stop that print operation stopped.

[0016]In a printing method in a printing system provided with a printing job means which carries out the printing job of the print data which should print the printing method according to claim 5, While directing beforehand a stop of print operation of said printing job means on the occasion of a printing demand of said print data at the time of a start of a printing job of the print data concerned, or an end, It is considered as the having-instruction process [which directs timing which notifies of a stop of the print operation concerned], and notice process of notifying of stop of print operation concerned to timing directed in said instruction process feature.

[0017]According to the printing method according to claim 5, when a printing job of the print data concerned is begun or completed in the case of a printing demand of print data, in an instruction process, directions are beforehand carried out in order to suspend print operation of a printing job means, and timing which notifies of the stop collectively is also directed. And arrival of timing of which it should notify will notify of a stop of print operation in a notice process. Therefore, while print operation stops without operation at the time of print data actually being printed automatically, a user is made to recognize that print operation stopped in desired timing.

[0018]In the printing method according to claim 5 the printing method according to claim 6, A memory process of memorizing information required in order to calculate time taken to carry out the printing job of said print data, A printing time prediction process of predicting printing time which is the time which said printing job takes from said information memorized and a state of said printing job means by calculation, Further, while having a notice time calculating process which computes notice time which should notify of a stop of said print operation based on timing directed in said predicted printing time and said instruction process, Said notice process notifies of a stop of said print operation in said computed notice time.

[0019]According to the printing method according to claim 6, a predicted value of printing time which a printing job takes in a printing time prediction process is beforehand calculated from information memorized by memory measure and a state of a printing job means. And if this notice time comes while notice time of a stop of print operation is computed in a notice time calculating process based on timing which was instructed to be a predicted value of this printing time and of which it should notify, in a notice process, it will be notified of a stop of print operation. Therefore, printing time is actually specified before a printing job start, and a user is made to recognize that print operation stopped in timing of a request on the basis of the printing time.

[0020]In the printing method according to claim 5 or 6, the printing method according to claim 7 said printing method, Two or more client apparatus which generate said print data, and a printer which prints said print data are the printing methods in a system connected by a network, and said instruction process, While pointing to the partner point which should notify of a stop of said print operation beforehand and including a user of a specific client apparatus connected by said network, or an administrator of said network in the partner point concerned, Said notice process notifies of a stop of said print operation via said network to said directed partner point.

[0021]A user of a specific client apparatus which was connected to a network according to the printing method according to claim 7, Or in an instruction process, the partner point including a network administrator is beforehand directed as the partner point of which it should notify, and it is notified of a stop of print operation in a notice process to this partner point via a network. Therefore, it is made to recognize also not only to a real user but to other users on a network and a network administrator that print operation stopped.

[0022]In the printing method according to claim 7, the printing method according to claim 8 from claim 5 said instruction process, While directing beforehand a reason for a stop of said print operation of which it should notify, said notice process is faced notifying of a stop of said print operation, and notifies of a reason for said directed stop collectively.

[0023]According to the printing method according to claim 8, a reason for a stop of print operation is beforehand directed in an instruction process, and in a notice process, it is collectively notified of a reason for the stop concerned in the case of a notice of a stop of print

operation. Therefore, it is made to recognize to a user etc. with a cause of the stop that print operation stopped.

[0024]A recording medium with which the printing control program according to claim 9 was recorded, A computer contained in a printing system provided with a printing job means which carries out the printing job of the print data which should be printed, While directing beforehand a stop of print operation of said printing job means on the occasion of a printing demand of said print data at the time of a start of a printing job of the print data concerned, or an end, It is considered as an announcement means which notifies of a stop of the print operation concerned, and is made to function to timing directed by directing means which directs timing which notifies of a stop of the print operation concerned, and said directing means.

[0025]According to the computer which reads and performs a recording medium with which the printing control program according to claim 9 was recorded. Timing which directions are beforehand carried out by directing means and notifies of the stop collectively in the case of a printing demand of print data in order to suspend print operation of a printing job means when a printing job of the print data concerned is begun or completed is also directed. And if timing of which it should notify comes, it will be notified of a stop of print operation by announcement means. Therefore, while print operation stops without operation at the time of print data actually being printed automatically, a user is made to recognize that print operation stopped in desired timing.

[0026]A recording medium with which the printing control program according to claim 10 was recorded, In a storage with which the printing control program according to claim 9 was memorized, A memory measure which memorizes information required in order to calculate time which takes said computer to carry out the printing job of said print data, A printing time prediction means which predicts printing time which is the time which said printing job takes from said information memorized and a state of said printing job means by calculation, And while making it function further as a notice time calculating means which computes notice time which should notify of a stop of said print operation based on timing directed by said predicted printing time and said directing means, Said announcement means notifies of a stop of said print operation in said computed notice time.

[0027]According to the computer which reads and performs a recording medium with which the printing control program according to claim 10 was recorded, a predicted value of printing time which a printing job takes by a printing time prediction means is beforehand calculated from information memorized by memory measure and a state of a printing job means. And if this notice time comes while notice time of a stop of print operation is computed by notice time calculating means based on timing which was instructed to be a predicted value of this printing time and of which it should notify, it will be notified of a stop of print operation by announcement means. Therefore, printing time is actually specified before a printing job start, and a user is made to recognize that print operation stopped in timing of a request on the basis of the printing time.

[0028]A recording medium with which the printing control program according to claim 11 was recorded, In a memorized storage, the printing control program according to claim 9 or 10 said printing system, Two or more client apparatus which generate said print data, and a printer which prints said print data are the systems connected by a network, and said directing means, While pointing to the partner point which should notify of a stop of said print operation beforehand and including a user of a specific client apparatus connected by said network, or an administrator of said network in the partner point concerned, Said announcement means notifies of a stop of said print operation via said network to said directed partner point.

[0029]According to the computer which reads and performs a recording medium with which the printing control program according to claim 11 was recorded. The partner point including a user of a specific client apparatus connected to a network or a network administrator is beforehand directed by a directing means as the partner point of which it should notify, and it is notified of a stop of print operation by announcement means via a network to this partner point. Therefore, it is made to recognize also not only to a real user but to other users on a network and a network administrator that print operation stopped.

[0030]A recording medium with which the printing control program according to claim 12 was recorded, In a memorized storage, the printing control program according to claim 11 from claim 9 said directing means, While directing beforehand a reason for a stop of said print operation of which it should notify, said announcement means is faced notifying of a stop of said print operation, and notifies of a reason for said directed stop collectively.
[0031]According to the computer which reads and performs a recording medium with which the printing control program according to claim 12 was recorded, a reason for a stop of print operation is beforehand directed by a directing means, and it is collectively notified of a reason for the stop concerned by announcement means in the case of a notice of a stop of print operation. Therefore, it is made to recognize to a user etc. with a cause of the stop that print operation stopped.
[0032]
[Embodiment of the Invention]Next, the suitable embodiment for this invention is described based on a drawing. The embodiment described below is an embodiment when two or more computers apply this invention to the output control in the case of carrying out joint use of the printer concerned by each computer in the printing system connected to the printer via data converters of 1, such as a data server.
[0033]The composition of the printing system of introduction and an embodiment is explained using drawing 1.
[0034]As shown in drawing 1, the printing system of the embodiment is constituted by the four computers 1 thru/or 4, the data converter 6, the change machine 5 that connects the data converter 6 with each computers 1 thru/or 4, and the printer 7.
[0035]In this composition, each computers 1 thru/or 4 generate the print data which should be carried out a printout in the printer 7 using application software etc., and output them to the change machine 5. Here, as the above-mentioned output data, it is created by the Page Description Language of common knowledge of "PostScript" etc. of Adobe, for example.
[0036]The change machine 5 distributes the below-mentioned indicative data etc. which are outputted from the data converter 6 to each computer while it is provided with the buffer part which memorizes temporarily the print data from each computers 1 thru/or 4 and outputs these print data to the data converter 6 in time sharing for every computer.
[0037]It develops to the print bit map data for carrying out the printout of the print data transmitted via the change machine 5 from each computers 1 thru/or 4 in the printer 7 using the translation data which the data converter 6 concerned holds, and the data converter 6 is outputted to the printer 7.
[0038]The printer 7 performs a corresponding printout based on the outputted print bit map data.
[0039]Next, the details composition of each component which constitutes the above-mentioned printing system is explained using drawing 2 and drawing 3.
[0040]First, the composition and operation of the computers 1 thru/or 4 are explained using drawing 2 (a). Since the composition and operation of each computers 1 thru/or 4 are the same, it represents with the following explanation and the computer 1 is explained by it.
[0041]As shown in drawing 2 (a), the computer 1, CPU10 which executes each command which reads the program memorized by ROM13 and is included in it, It is constituted by the input part 11 which consists of a keyboard, a mouse, etc., the network connection part 12, ROM (ReadOnly Memory)13 and RAM (Random Access Memory)14, the display 15 that displays a variety of information, and the bus 16.
[0042]In the above-mentioned composition, it is connected to the change machine 5 and the network connection part 12 performs what is called interface operation to the data inputted into the data and the computer 1 which are outputted from the computer 1.
[0043]The input part 11 outputs it to CPU10 grade via the bus 16, when data required for the processing in the computer 1 is inputted.
[0044]ROM13 is a read-only memory which has memorized the program for control of the computer 1 whole, reads a program required of predetermined timing, and outputs it to the bus 16.

[0045]Actually, RAM14 memorizes data required for the processing in CPU10 etc. temporarily, and outputs them to the bus 16 if needed while being constituted by memory storage, such as a hard disk drive, etc. and installing the various control programs in CPU10.
[0046]The display 15 displays the below-mentioned picture and the below-mentioned processing time corresponding to the indicative data Sa while performing a display required for the processing in CPU10.
[0047]CPU10 performs various data processing or control of each above-mentioned component using the program memorized by RAM14.
[0048]Next, the composition and operation of the printer 7 are explained using drawing 2 (b).
[0049]The printer 7 is constituted by CPU17, the network connection part 18, ROM19 and RAM20, the output engines 21, and the bus 21a as shown in drawing 2 (b).
[0050]In this composition, it is connected to the data converter 6 and the network connection part 18 performs interface operation to the print bit map data which should be carried out a printout in the printer 7 concerned inputted into the printer 7.
[0051]CPU17 controls each component which constitutes the printer 7, and performs the printout of the print bit map data concerned.
[0052]ROM19 is a memory which has memorized the program for control of the printer 7 whole, reads a program required of predetermined timing, and outputs it to the bus 21a.
[0053]RAM20 memorizes data required for the processing in CPU17 etc. temporarily, and outputs them to the bus 21a if needed.
[0054]The output engines 21 are provided with printing departments, such as an inkjet method or an electrophotographying system, and perform printout processing of actual print bit map data.
[0055]Next, the composition and operation of the data converter 6 are explained using drawing 3.

[0056]As shown in drawing 3, the data converter 6 The interfaces 22a and 22b, It is constituted by CPU23 which reads and executes the program memorized by ROM36, ROM36 and RAM24, the bit map data generating part 25, the display data generating part 26, the bus 27, and translation data ROM35.
[0057]The bit map data generating part 25 builds in the logic operation circuit which consists of CPU25a, ROM25b, and RAM25c, and the display data generating part 26 builds in the logic operation circuit which consists of CPU26a, ROM26b, and RAM26c. Here, ROM25b has memorized the program for print-bit-map-data generation, and ROM26b has memorized the required program, when CPU26a controls the display data generating part 26.
[0058]In this composition, the interface 22a performs interface operation to the data from each computers 1 thru/or 4 through the change machine 5, and outputs it to the bus 27.
[0059]While CPU23 controls the data converter 6 whole, based on below-mentioned requirement signal Sr transmitted from each computers 1 thru/or 4, The output to each computers 1 thru/or 4 through the change machine 5 of the below-mentioned indicative data Sa to the printer 7 of the generated below-mentioned print bit map data outputted and generated is performed. By the below-mentioned processing, CPU23 computes the below-mentioned time required and transmits to the computers 1 thru/or 4.
[0060]RAM24 memorizes temporarily the print data Sb from each computers 1 thru/or 4 inputted into the data converter 6, etc., and outputs them to the bus 27 if needed. While memorizing temporarily the print bit map data generated in the below-mentioned bit map data generating part 25 and outputting to the printer 7 via the bus 27, The indicative data Sa generated in the below-mentioned display data generating part 26 is memorized temporarily, and it outputs to the printer 7 via the bus 27 at the computers 1 thru/or 4.
[0061]ROM36 is a read-only memory which has memorized the program for control of the data converter 6 whole, reads a program required of predetermined timing, and outputs it to the bus 27.
[0062]Translation data ROM35 is ROM which has memorized the translation data for changing into print bit map data the print data Sb (page description data created by the Page Description Language) inputted from the computer 1, The translation data concerned is shared in the bit map data generating part 25 and the display data generating part 26. And these are read if needed

including the font data 35a what is called corresponding to a character code contained in the conversion rule data 35b and the print data Sb for interpreting each command code in the print data Sb as concrete translation data, and drawing a figure etc.
[0063]The bit map data generating part 25 carries out deployment processing, and is outputted to the print bit map data for carrying out the printout of the print data Sb from each computers 1 thru/or 4 in the printer 7 RAM24. Namely, read the command code and the above-mentioned character code in the print data Sb, and also the conversion rule data 35b or the font data 35a corresponding to each is read from translation data ROM35, The figure corresponding to command code and the font corresponding to a character code are made to memorize by bit map format in the page memory in RAM24.
[0064]In deployment processing in the bit map data generating part 25, print bit map data are generated for every page which actually carries out a printout using the above-mentioned translation data containing the font etc. which are actually used for a printout in the printer 7.
[0065]The interface 22b performs interface processing to data required for the printing job in the printers 7, such as generated print bit map data, and outputs it to the printer 7.
[0066]The display data generating part 26 generates the indicative data Sa for the below-mentioned preview processing using the above-mentioned print data Sb and the above-mentioned translation data corresponding to requirement signal Sr transmitted from each computers 1 thru/or 4. That is, the same processing as generation of the print bit map data in the bit map data generating part 25 generates the bit map format indicative data Sa. Since the translation data from translation data ROM35 will be shared with the bit map data generating part 25 at this time, the indicative data Sa faithful to the actual printout in the printer 7 can be generated.
[0067]Next, the preview processing and the printing job concerning this embodiment are explained using the flow chart shown in drawing 4. In preview processing and the printing job of this embodiment, While the indicative data Sa faithful to the print data Sb which should be carried out a printout in the printer 7 is generated and being displayed on the display 15, the time required at the time of carrying out the printing job of the print data Sb is computed by CPU23, and is transmitted to the computers 1 thru/or 4.
[0068]In the following explanation, since an understanding is easy, while explaining the preview processing and the printing job which used the computer 1, the data converter 6, and the printer 7, processing of processing of the computer 1, the data converter 6, and the printer 7 is explained in parallel. The embodiment described below is an embodiment at the time of using the data converter 6 of composition of not saving this to a printing job start, even if the print data Sb are inputted.
[0069]As shown in drawing 4, in preview processing and the printing job of an embodiment, the print data Sb which should be first carried out a printout in the computer 1 using the printer 7 are generated (Step S1).
[0070]And the generated print data Sb concerned are transmitted to the data converter 6 with requirement signal Sr of preview processing via the change machine 5 (Step S2), and it is received in the data converter 6 concerned (Step S3).
[0071]Next, it is judged whether the operation auxiliary value used in order to calculate the time required at the time of carrying out the printing job of the received print data Sb is memorized by RAM24 (step S4). And when the operation auxiliary value concerned is memorized, estimated calculation of the time required is carried out using the operation auxiliary value concerned (Step S4; yes) (Step S5).
[0072]Here, when the above-mentioned time required is explained, it is desirable to consider it as time until it finishes printing it as the time required concerned from the generation start of the print bit map data in the bit map data generating part 25. For this reason, in calculation of the time required by Step S5, The time which generation of print bit map data takes, While computing by analyzing the contents of print data, the time from the completion of generation of print bit map data to the end of printing, It computes by adding the time proportional to the predetermined printing size corresponding to printing size currently beforehand computed by the experiment etc. to the rough value of the time required required by transmission to the printer 7

of print bit map data.
[0073]The thing based on the actual measurement at the time of generating the indicative data for preview processing in Step S10 mentioned later may be sufficient as the time which generation of print bit map data takes. In this case, the time required can be found more nearly promptly. It is good also as time when a actual printout is printed with the printer 7.
[0074]In addition, as the time required, it is good also as time from the generation start of the print bit map data in the bit map data generating part 25 to the end of generation, and, for example. It is good also as time to the transmission to the time to the completion of transmission to the printer 7 of the print bit map data from the generation start of the print bit map data in the bit map data generating part 25, or other memory storage. A printout is actually good also as time printed with the printer 7.
[0075]It is not from the print-bit-map-data generation start corresponding to the target print data, and suppose that it is the time of commencement of the time required from the time when the print data concerned were sent to the data converter 6. In that case, the time required can compute the time which processing of the print data which should be processed ahead of the print data concerned takes by adding to the above-mentioned time required.
[0076]Next, when the above-mentioned operation auxiliary value is explained, the operation auxiliary value concerned, When the same print data Sb are inputted into the data converter 6, it is an auxiliary value used in the case of the operation of the above-mentioned time required of the 2nd henceforth, and once it is computed about the one print data Sb, it memorizes in RAM24 like the after-mentioned.
[0077]And as a concrete value of the operation auxiliary value concerned, May memorize the time required itself calculated [above-mentioned] as an operation auxiliary value corresponding to the print data Sb concerned, and, It is unit size (.) about time to change in proportion to printing size (magnifying power or reduction percentage) among time required for a printing job. That is, it does not depend on printing size, but it may divide at fixed time (only hereafter referred to as "b".), and the value (only hereafter referred to as "a".) which **(ed) in time at the time of printing the case where it prints with magnifying power 1.0 to the print data Sb may be memorized at it. In the case of the latter, the actually required time required is computable as time required =ax(printing size) +b.
[0078]moreover -- the time actually printed with the printer 7 sets time to be proportional to the length direction printing size to c -- time required =ax(printing size) +b+cx (the length direction printing size)
It can come out and compute. This value is the press speed of the printer 7, and time not to be dependent on sizes, such as loading of a paper, is contained in b.
[0079]Here, as time to change in proportion to the above-mentioned printing size, there is time which the conversion to bit map data from vector data takes, time for a bit map data transfer, or time for transmitting print bit map data to the printer 7, for example.
[0080]It does not depend on printing size but there are time for syntax analysis of the print data Sb, time for the coordinate conversion of vector data, etc. as fixed time.
[0081]If the time required calculates by said explained method (Step S5), Next, the time required information corresponding to the time required concerned is replied to the computer 1 (Step S8), this is received in the computer 1, the time required concerned is displayed on the display 15, and a user is notified (step S9).
[0082]When the operation auxiliary value is not memorized in the judgment of step S4 on the other hand, When the received print data Sb are the print data Sb which do not have till then preview processing or that the printing job was carried out, namely, the (step S4; no), Next, based on the print data Sb concerned, while carrying out estimated calculation of the above-mentioned time required by CPU23, the above-mentioned operation auxiliary value is computed (Step S6). And it memorizes to RAM24 with the information for identifying the print data Sb which correspond the computed operation auxiliary value concerned (Step S7).
[0083]By backing up, for example by a cell etc. or carrying out fixation, the field in RAM24 which memorizes an operation auxiliary value is constituted so that the operation auxiliary value which has memorized the power supply of the data converter 6 also as ** may not disappear.

[0084]After memory of an operation auxiliary value is completed, it shifts to the above-mentioned step S8 and S9.
[0085]Next, the print data Sb in which the display data generating part 26 is memorized by RAM24 in the data converter 6, The indicative data Sa which should be displayed on the display 15 using the translation data containing the above-mentioned font data 35a, the conversion rule data 35b, etc. is generated (Step S10). (deployment) At this time, the generated indicative data Sa is bit map format data of the almost same mode as a mode (modes, such as character style, a size of a character, the whole layout, and color arrangement) when actually carrying out the printout of the print data Sb.
[0086]And the generated indicative data Sa is transmitted to the computer 1 (Step S11).
[0087]Next, if the indicative data Sa concerned is received in the computer 1 (Step S12), The picture (picture corresponding to the indicative data Sa) which was mostly in agreement with the mode when carrying out the printout of the picture Sb corresponding to the indicative data Sa concerned, i.e., the print data, in the printer 7 is displayed on the display 15, and a user checks this (Step S13).
[0088]And if the input of the supplementary information at the time of actually performing printing (for example, the above-mentioned printing size at the time of printing) is performed in the computer 1 (Step S14), Next, indicative data (directive command) is transmitted with the print data Sb as requirement signal Sr in which it is shown whether a printout is actually started from the computer 1 (Step S15).
[0089]Next, if the indicative data concerned and the print data Sb are received in the data converter 6 (Step S16), the above-mentioned time required corresponding to the received print data Sb will be calculated using an operation auxiliary value, and the corresponding (Step S17) time required will be transmitted to the computer 1 (Step S18). And the time required corresponding to the time required information transmitted in the computer 1 is displayed, and a user is notified (Step S19).
[0090]In the data converter 6, are parallel with the above-mentioned step S19, The print data Sb memorized by RAM24 are developed to print bit map data by the bit map data generating part 25, it outputs to the printer (Step S20) 7, and printing is performed using the output engines 21 in the printer 7 (Step S21).
[0091]And if a printout is completed, the print data Sb memorized by RAM24 will be deleted and processing (Step S22) will be ended.
[0092]The information displayed in the above-mentioned step S19 may be changed and displayed on the residual time to the end of a printing job other than the time required itself mentioned above, and may compute and display schedule finish time. The rate of lapsed time over the whole time required may be computed and displayed. Conversion to these information to display is [in / at the above-mentioned step S18 / Step S19] possible.
[0093]Next, in the notice processing of a printing stop concerning this embodiment, the setting operation performed by computer 1 is explained based on the setting screen on the display 15 of the computer 1 shown in drawing 5. In this embodiment, while suspending the printing job which it is going to perform at the time of a start of printing or the end of printing, when transmitting the notice of a printing stop from the data converter 6 to predetermined timing, reporting timing, a notice content, etc. are beforehand set up by computer 1. Under the present circumstances, the user of the computer 1 inputs a setting detail by operating the keyboard in the input part 11, a mouse, etc. And according to a setting detail, a printing stop and processing of the notice are performed in the data converter 6. Said setting operation in the computer 1 is incorporable as one function of application software, such as a printing job.
[0094]As shown in drawing 5, the setting screen displayed on the display 15 of the computer 1 is displayed to the existence of a halt, reporting timing, a report destination, and each setting-out item of a notice content in order to perform the following setting out. In the setting screen of drawing 5, one inputted item accepts it, it can choose, the radio button displayed by O and two or more inputted items can be chosen, and there are input methods, such as an input by the check box and character string which are displayed by **.
[0095]The existence of halt execution of printing is chosen as the item of a "halt" by setting

one of "it carries out" and "not carrying out" up. One side or both "before printing" and "after printing" can be set up as printing stop timing. For example, in order to once stop the printer 7 just before a start of printing and to perform sheet replacing to print on a special paper, set up "before printing", but. It is desirable to, carry out setting out "after printing" in addition in a case which is made to suspend the printer 7 again at the time of the end of printing, and is returned to the original paper.

[0096]It is set [of a "start of printing" or "an end of printing"] to the item of "reporting timing" whether it notifies in front by inputting a numerical value. Here, since the actual notice needs to transmit before printing execution, based on the processing which mentioned above the start-of-printing time and printing end time of the print job which should be performed, it asks by performing estimated calculation, and the actual timing which notifies based on this value is determined by the data converter 6. The processing performed by this data converter 6 is attached and mentioned later.

[0097]If the setting detail of the "halt" of printing mentioned above is set up "before printing", If the numerical value which shows whether reporting timing is a front on the basis of the time of a start of printing is inputted and the setting detail of the "halt" is set up "after printing", reporting timing will input the numerical value which shows whether it is a front on the basis of the time of the end of printing. Here, if the numerical value to input is set to "0", it can set up so that a notice may be performed simultaneously with the end of printing simultaneously with a start of printing.

[0098]The "user" who is a user who considers it as the partner point which should transmit a notice to the item of a "report destination", and performs setting operation by computer 1, The "appointed address" which is a contact of other users who can transmit a notice can be set up with the character string which shows address information via the "administrator" who manages the printing system on a network, and a network, respectively. It can set up combining these three freely, it overlaps, and a notice can be transmitted.

[0099]A "specification message" can be set to the item of a "notice content" with the character string of arbitrary messages as "sheet replacing", a "maintenance", and other reasons as a reason for a printing stop, respectively. For example, what is necessary is to set up "sheet replacing", when performing sheet replacing to the special paper mentioned above, and just to set up a "maintenance", when performing head cleaning of the printer 7, etc. It can also set up combining three sorts of these reasons freely. The notice content set up here is transmitted to a report destination as a message which tells the reason for a printing stop.

[0100]When the data of each item set up by the setting operation of the computer 1 explained above transmits print data to the data converter 6 by printing demand, it is added to print data and transmitted to the data converter 6. It is possible for it not to be limited to each item mentioned above as a setting-out item, and to add items, such as a user's user name, a print job name, and halt execution time, besides this.

[0101]Next, in the notice processing of a printing stop concerning this embodiment, it is set up by computer 1 and the flow chart shown in drawing 6 explains the generation processing of the notice data generated by the data converter 6 based on the information set transmitted to the data converter 6 with print data.

[0102]As shown in drawing 6, in the data converter 6, distinction of the contents of an information set of the computer 1 which received is performed one by one. First, in an information set, the existence of setting out of a "halt" of printing is distinguished (Step S31). If a "halt" is set up for "not carrying out" (Step S31; NO), subsequent processings will not be performed but processing will be ended promptly.

[0103]If a "halt" is set up for "carrying out" (Step S31; YES), it will be distinguished whether a halt of printing is set to the standard in the time of the start of a printing job (Step S32). If the setting detail which shows the point back of printing inputted along with setting out of a "halt" is set up "before printing" (Step S32; YES), the notice time of the printing stop on the basis of the time of a start of printing will be calculated (Step S33).

[0104]Here, the calculation method of the notice time concerned is explained. First, as mentioned above, estimated calculation of the start-of-printing time of the print job which is the

target of a halt is carried out, and it is memorized in the data converter 6. Calculation of notice time for which it should ask based on the time of the reporting timing which makes a start of printing the starting point of reckoning among this value and the received information set is performed. Specifically, the value which reduced and found the time of the above-mentioned reporting timing from start-of-printing time is set as notice time. This start-of-printing time is set also as printing stop time. On the other hand, if the "halt" is not set up as "before printing" (Step S32; NO), processing of Step S33 is not performed.

[0105]Subsequently, it is distinguished whether a halt of printing is set to the standard in the time of the end of a printing job (Step S34). If a "halt" is set up as "after printing" (Step S34; YES), the notice time of the printing stop on the basis of the time of the end of printing will be calculated (Step S35).

[0106]Calculation of the notice time concerned is performed by carrying out based on the preset value of the printing end time which mentioned above the print job which is the target of a halt and by which estimated calculation was carried out, and the time of the "reporting timing" which makes the received end of printing of an information set the starting point of reckoning. Specifically, the value which reduced and found the time of the above-mentioned reporting timing from printing end time is set as notice time. This printing end time is set also as printing stop time. On the other hand, if the "halt" is not set up as "after printing" (Step S34; NO), processing of Step S35 is not performed.

[0107]Subsequently, it carries out from Step S36, applying the processing corresponding to the reason for a halt of printing to Step S40.

[0108]First, it is distinguished whether the reason for a halt of printing is sheet replacing (Step S36). In an information set, if the "notice content" is set up as "sheet replacing" (Step S36; YES), it will set to the character string which shows the stoppage reason in notice data with "print sheet exchange" (Step S37). On the other hand, if the "notice content" is not set up as "sheet replacing" (Step S36; NO), processing of Step S37 is not performed.

[0109]Then, it is distinguished whether the reason for a halt of printing is a maintenance (Step S38). In an information set, if the "notice content" is set up as a "maintenance" (Step S38; YES), it will set to the character string which shows the stoppage reason in notice data with a "maintenance" (Step S39). On the other hand, if the "notice content" is not set up as a "maintenance" (Step S38; NO), processing of Step S39 is not performed.

[0110]When there is a character string which shows the inputted message as inside of an information set "specification message" when setting up the reason for a halt of printing, this is extracted and it is considered as the comment message in notice data (Step S40).

[0111]Subsequently, it reads based on the memory content which is having the print job name over a user's print data which suspended printing spooled, and sets as a print job name in notice data (Step S41). under the present circumstances, the user name of a print job is also read and it sets as a user name in notice data, [rank second and] In an information set, the address information to which a notice should be transmitted is extracted from the contents set up as a "report destination" of a halt of printing, and it sets as a report destination in notice data (Step S42).

[0112]The notice data generated as a result of the above processing is rearranged and registered into the last according to an order of the notice time computed by above-mentioned processing (Step S43). And if arrival of the notice time of the earliest notice data is supervised among each rearranged data and the notice time comes, the contents of notice data will be transmitted to the report destination which should transmit a notice including stop time, a print job name, a user name, a stoppage reason, and a comment.

[0113]Next, the notice data registered as mentioned above is transmitted as a notification message to a report destination, and the display example in the case of being displayed on the display of a report destination, etc. is explained using drawing 7.

[0114]As shown in drawing 7, the display screen as which a notification message is displayed in a report destination displays a required item in the data content set to notice data according to the processing mentioned above. The transmission of the notification message to a report destination can use the E-mail which passed the network, for example.

[0115]The message of "a printer halt" which the concrete display item in drawing 7 reports that a halt of printing is, Each item, such as a "comment" etc. which "stoppage reasons", such as "stop time", a "print job" which is the targets of a halt, a "user" who performs the print job, and sheet replacing, and a user inputted, is included.
[0116]The user who received the notice, or other users can recognize that print operation stopped or that it is predicted that it stops transmission of the notification message for notifying of a halt of the above printing, and by performing the display. The stop time of print operation can be recognized collectively. Moreover, this user that performed setting out of the halt can also recognize the timing which its printing job starts or ends by receiving a notice. Therefore, this user that set up a halt, Can do the work which should be done exactly and promptly including the preparation, and other users, Since a printing stop is not prolonged more than needed, a big effect is acquired by delay of each print job remaining in the minimum, and applying this embodiment to a printing system, since other users who received the notice can respond based on the information about the printing stop which came to hand.
[0117]In each above-mentioned embodiment, although the data converter 6 and the printer 7 were explained as a separate independent device, it is also possible to give the function as the above-mentioned data converter to the printer itself besides this. In this case, the program which shows operation concerning this invention can be built in in a printer as what is called a RIP (Raster Image Processer) program for developing the print data from a computer to bit map data.
[0118]As for the printing control program in the printing system concerning this invention mentioned above, it is possible to make it record on recording media, such as CD-ROM which can be read, and a floppy disk, in the computer on a network. And the printing system of this invention is realized by installing and executing a printing control program in a computer using the CD-ROM concerned etc.
[0119]
[Effect of the Invention]Since it notified of the stop of print operation when according to the printing system according to claim 1 it pointed to the notification timing of a stop and stop of print operation on the occasion of the printing job of print data and became notification timing, as explained above, A user is made to recognize that stopped print operation without any operation automatically, and print operation stopped in desired timing. Therefore, a user's burden is eased, and after suppressing the influence which it has on other users' printing job, it makes it possible to do work proper at the time of a printing stop.
[0120]Since it notified of the stop of print operation when according to the printing system according to claim 2 the notice time of the stop of print operation was computed and this notice time came based on the predicted value and notification timing of printing time which were calculated beforehand, A user is made to recognize that print operation stopped in the timing of the request on the basis of the printing time actually specified before the printing job start. Therefore, the user can judge a printing stop earlier than the time of a actual printing stop, and since preparation etc. of the work which should be done at the time of a printing stop can be made, a user's burden is eased further.
[0121]Since the user of the specific client apparatus on a network and the network administrator were made to do it with the partner point of the notice of a printing stop according to the printing system according to claim 3, It is made to recognize also not only to a real user but to other users on a network and a network administrator that print operation stopped. Therefore, the information on a printing stop can be reported over the wide range, and it makes it possible to suppress further the influence which it has on other users' printing job.
[0122]Since according to the printing system according to claim 4 the reason for the stop of print operation is combined with the notice of a stop of print operation and it notified of it, it is made to recognize to a user etc. with the cause of the stop that print operation stopped. Therefore, when printing stops, it makes it possible to carry out exact management based on the cause of the printing stop.
[0123]Since it notified of the stop of print operation when according to the printing method according to claim 5 it pointed to the notification timing of a stop and stop of print operation on

the occasion of the printing job of print data and became notification timing, A user is made to recognize that stopped print operation without any operation automatically, and print operation stopped in desired timing. Therefore, a user's burden is eased, and after suppressing the influence which it has on other users' printing job, it makes it possible to do work proper at the time of a printing stop.

[0124]Since it notified of the stop of print operation when according to the printing method according to claim 6 the notice time of the stop of print operation was computed and this notice time came based on the predicted value and notification timing of printing time which were calculated beforehand, A user is made to recognize that print operation stopped in the timing of the request on the basis of the printing time actually specified before the printing job start. Therefore, the user can judge a printing stop earlier than the time of a actual printing stop, and since preparation etc. of the work which should be done at the time of a printing stop can be made, a user's burden is eased further.

[0125]Since the user of the specific client apparatus on a network and the network administrator were made to do it with the partner point of the notice of a printing stop according to the printing method according to claim 7, It is made to recognize also not only to a real user but to other users on a network and a network administrator that print operation stopped. Therefore, the information on a printing stop can be reported over the wide range, and it makes it possible to suppress further the influence which it has on other users' printing job.

[0126]Since according to the printing method according to claim 8 the reason for the stop of print operation is combined with the notice of a stop of print operation and it notified of it, it is made to recognize to a user etc. with the cause of the stop that print operation stopped. Therefore, when printing stops, it makes it possible to carry out exact management based on the cause of the printing stop.

[0127]According to the computer which reads and performs the recording medium with which the printing control program according to claim 9 was recorded. Since it notified of the stop of print operation when it pointed to the notification timing of a stop and stop of print operation on the occasion of the printing job of print data and became notification timing, a user is made to recognize that stopped print operation without any operation automatically, and print operation stopped in desired timing. Therefore, a user's burden is eased, and after suppressing the influence which it has on other users' printing job, it makes it possible to do work proper at the time of a printing stop.

[0128]According to the computer which reads and performs the recording medium with which the printing control program according to claim 10 was recorded. Since it notified of the stop of print operation when the notice time of the stop of print operation was computed and this notice time came based on the predicted value and notification timing of printing time which were calculated beforehand, A user is made to recognize that print operation stopped in the timing of the request on the basis of the printing time actually specified before the printing job start. Therefore, the user can judge a printing stop earlier than the time of a actual printing stop, and since preparation etc. of the work which should be done at the time of a printing stop can be made, a user's burden is eased further.

[0129]According to the computer which reads and performs the recording medium with which the printing control program according to claim 11 was recorded. Since the user of the specific client apparatus on a network and the network administrator were made to do it with the partner point of the notice of a printing stop, it is made to recognize also not only to a real user but to other users on a network and a network administrator that print operation stopped. Therefore, the information on a printing stop can be reported over the wide range, and it makes it possible to suppress further the influence which it has on other users' printing job.

[0130]Since according to the computer which reads and performs the recording medium with which the printing control program according to claim 12 was recorded the reason for the stop of print operation is combined with the notice of a stop of print operation and it notified of it, it is made to recognize to a user etc. with the cause of the stop that print operation stopped. Therefore, when printing stops, it makes it possible to carry out exact management based on the cause of the printing stop.

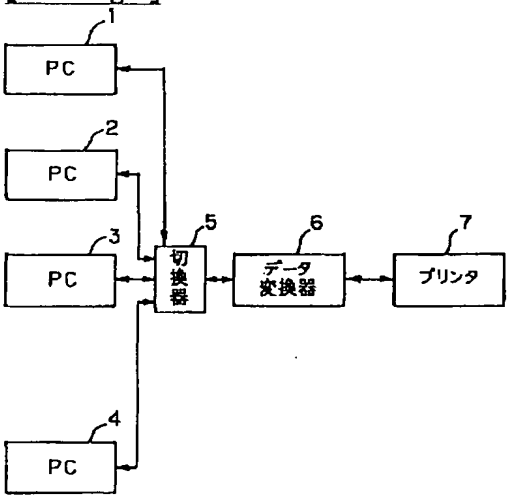
[Translation done.]

* NOTICES *

1.This document has been translated by computer. So the translation may not reflect the original precisely.
2.**** shows the word which can not be translated.
3.In the drawings, any words are not translated.

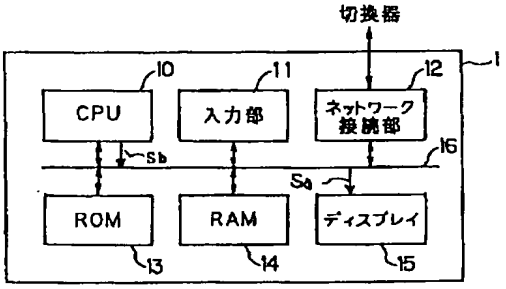
DRAWINGS

[Drawing 1]

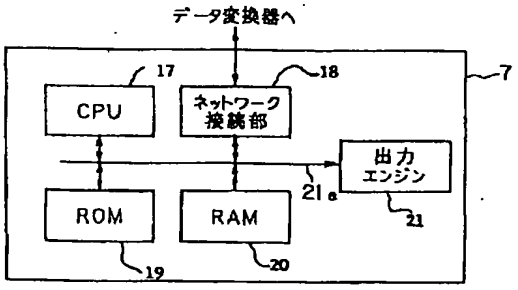


[Drawing 2]

コンピュータ及びプリンタの細部構成を示すブロック図



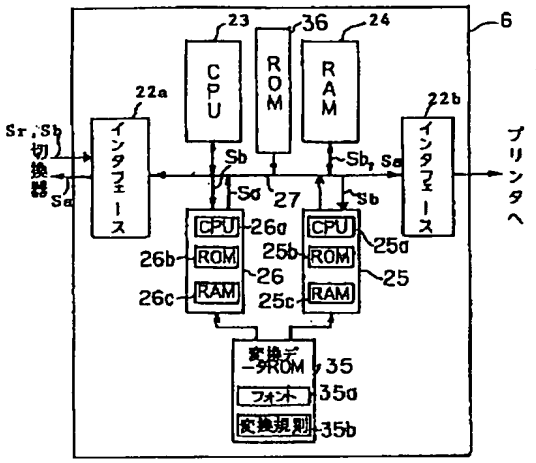
(a)



(b)

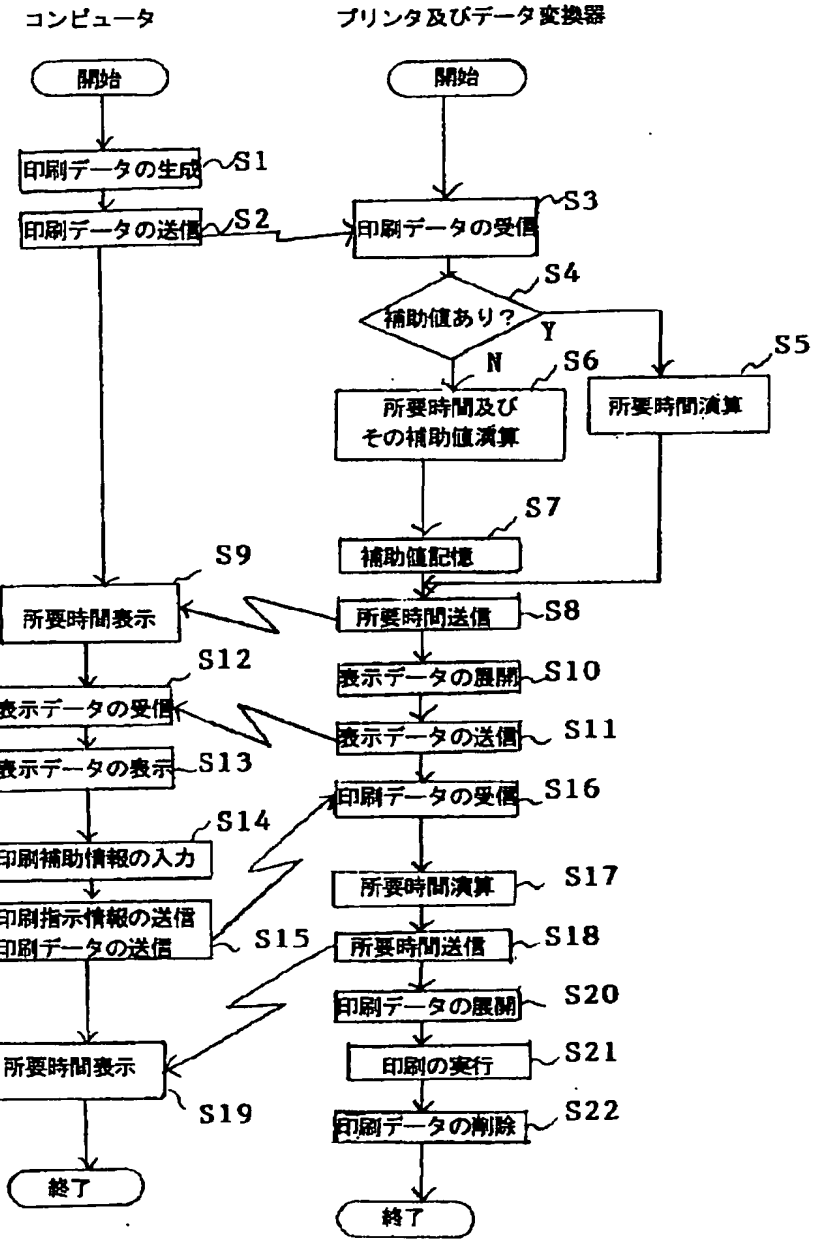
[Drawing 3]

データ変換器の細部構成を示すブロック図

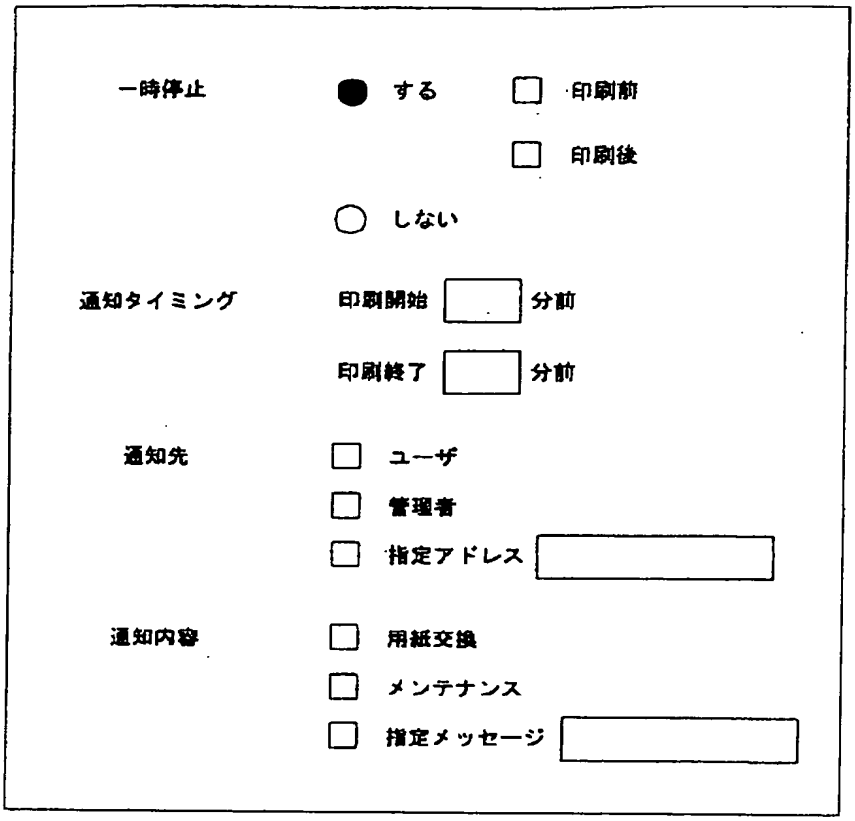


[Drawing 4]

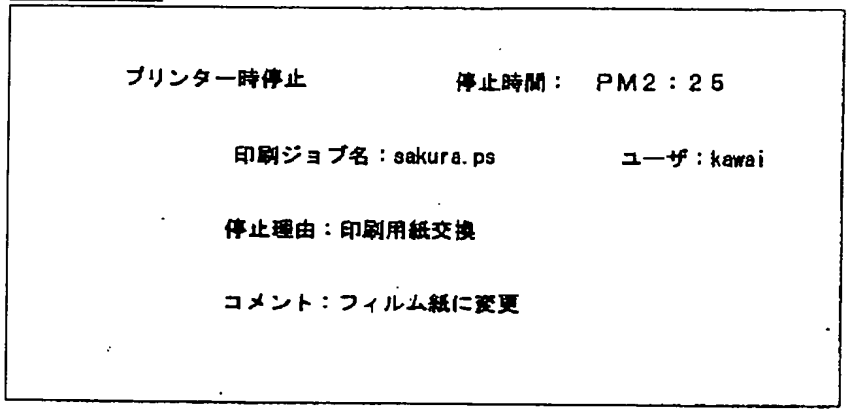
実施形態のプレビュー処理及び印刷処理の動作を示すフローチャート



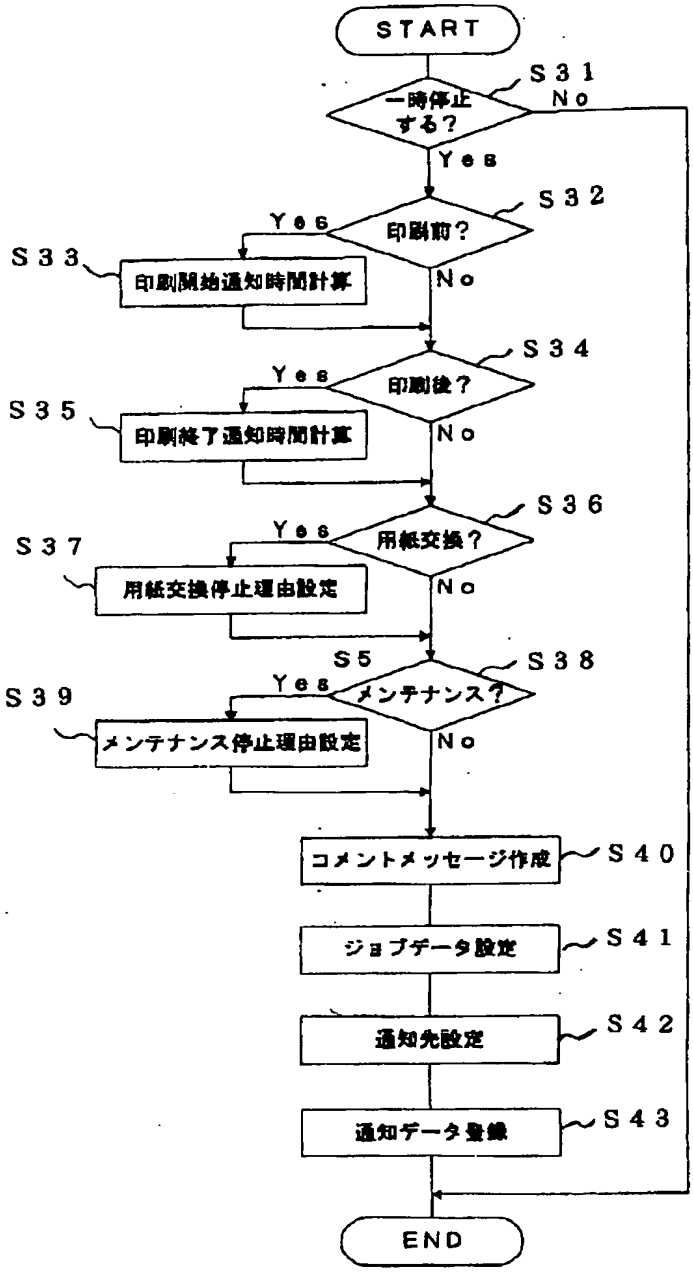
[Drawing 5]



[Drawing 7]



[Drawing 6]



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CORRECTION OR AMENDMENT

[Kind of official gazette]Printing of amendment by regulation of 2 of Article 17 of Patent Law
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[FI]

G06F 3/12 C

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29/38 Z

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[Written amendment]
[Filing date]September 24, Heisei 14 (2002.9.24)
[Amendment 1]
[Document to be Amended]Specification
[Item(s) to be Amended]Whole sentence
[Method of Amendment]Change
[Proposed Amendment]
[Document Name]Specification
[Title of the Invention]A recording medium with which a recording medium with which a printing system, a printing method, and a printing control program were recorded, a data processing device used for a printing system, a data-processing control method, and a data-processing control program were recorded
[Claim(s)]
[Claim 1]In a printing system provided with a printing job means which carries out the printing job of the print data which should be printed,
A directing means which directs timing which notifies of a stop of the print operation concerned while directing beforehand a stop of print operation of said printing job means on the occasion of

a printing demand of said print data at the time of a start of a printing job of the print data concerned, or an end,
An announcement means which notifies of a stop of the print operation concerned to timing directed by said directing means,
A printing system by which it is preparation ****** characterized.
[Claim 2]A memory measure which memorizes information required in order to calculate time taken to carry out the printing job of said print data,
A printing time prediction means which predicts printing time which is the time which said printing job takes from said information memorized and a state of said printing job means by calculation,
A notice time calculating means which computes notice time which should notify of a stop of said print operation based on timing directed by said predicted printing time and said directing means,
furthermore -- while having
The printing system according to claim 1, wherein said announcement means notifies of a stop of said print operation in said computed notice time.
[Claim 3]Said printing system is a system to which two or more client apparatus which generate said print data, and a printer which prints said print data were connected by a network,
While said directing means points to the partner point which should notify of a stop of said print operation beforehand further and a user of a specific client apparatus connected by said network or an administrator of said network is included in the partner point concerned,
The printing system according to claim 1 or 2, wherein said announcement means notifies of a stop of said print operation via said network to said directed partner point.
[Claim 4]While said directing means directs beforehand further a reason for a stop of said print operation of which it should notify,
From claim 1, wherein it faces said announcement means notifying of a stop of said print operation and it notifies of a reason for said directed stop collectively to the printing system according to claim 3
[Claim 5]In a printing method in a printing system provided with a printing job means which carries out the printing job of the print data which should be printed,
An instruction process which directs timing which notifies of a stop of the print operation concerned while directing beforehand a stop of print operation of said printing job means on the occasion of a printing demand of said print data at the time of a start of a printing job of the print data concerned, or an end,
A notice process of notifying of a stop of the print operation concerned to timing directed in said instruction process,
A printing method by which it is preparation ****** characterized.
[Claim 6]A memory process of memorizing information required in order to calculate time taken to carry out the printing job of said print data,
A printing time prediction process of predicting printing time which is the time which said printing job takes from said information memorized and a state of said printing job means by calculation,
A notice time calculating process which computes notice time which should notify of a stop of said print operation based on timing directed in said predicted printing time and said instruction process,
furthermore -- while having
The printing method according to claim 5, wherein said notice process notifies of a stop of said print operation in said computed notice time.
[Claim 7]Said printing method is a printing method in a system to which two or more client apparatus which generate said print data, and a printer which prints said print data were connected by a network,
While said instruction process points to the partner point which should notify of a stop of said print operation beforehand further and a user of a specific client apparatus connected by said network or an administrator of said network is included in the partner point concerned,
The printing method according to claim 5 or 6, wherein said notice process notifies of a stop of

said print operation via said network to said directed partner point.
[Claim 8]While said instruction process directs beforehand further a reason for a stop of said print operation of which it should notify,
From claim 5, wherein it faces said notice process notifying of a stop of said print operation and it notifies of a reason for said directed stop collectively to the printing method according to claim 7
[Claim 9]A computer contained in a printing system provided with a printing job means which carries out the printing job of the print data which should be printed,
a directing means which directs timing which notifies of a stop of the print operation concerned while directing beforehand a stop of print operation of said printing job means on the occasion of a printing demand of said print data at the time of a start of a printing job of the print data concerned, or an end -- and
An announcement means which notifies of a stop of the print operation concerned to timing directed by said directing means,
A recording medium with which a printing control program making it function by carrying out was recorded.
[Claim 10]Said computer,
A memory measure which memorizes information required in order to calculate time taken to carry out the printing job of said print data,
a printing time prediction means which predicts printing time which is the time which said printing job takes from said information memorized and a state of said printing job means by calculation -- and
A notice time calculating means which computes notice time which should notify of a stop of said print operation based on timing directed by said predicted printing time and said directing means,
It is while carrying out and making it function further,
A storage with which the printing control program according to claim 9, wherein said announcement means notifies of a stop of said print operation in said computed notice time was memorized.
[Claim 11]Said printing system is a system to which two or more client apparatus which generate said print data, and a printer which prints said print data were connected by a network,
While said directing means points to the partner point which should notify of a stop of said print operation beforehand further and a user of a specific client apparatus connected by said network or an administrator of said network is included in the partner point concerned,
A storage with which the printing control program according to claim 9 or 10, wherein said announcement means notifies of a stop of said print operation via said network to said directed partner point was recorded.
[Claim 12]While said directing means directs beforehand further a reason for a stop of said print operation of which it should notify,
A storage with which the printing control program according to claim 11 was recorded from claim 9, wherein it faces said announcement means notifying of a stop of said print operation and it notifies of a reason for said directed stop collectively.
[Claim 13]It is a data processing device which is used for a printing system provided with a printing job means which carries out the printing job of the print data which should be printed, and processes said print data,
A memory measure which memorizes information required in order to calculate time taken to carry out the printing job of said print data,
A printing time prediction means which predicts printing time which is the time which said printing job takes from said information memorized and a state of said printing job means by calculation,
A notice time calculating means which computes notice time which should notify of a stop of said print operation based on said predicted printing time and timing a stop of print operation of said printing job means is instructed to be at the time of a start of a printing job of print data, or an end,

A data processing device used for a printing system characterized by preparation ******.
[Claim 14]It is the data-processing control method in a data processing device which is used for a printing system provided with a printing job means which carries out the printing job of the print data which should be printed, and processes said print data,
A memory process of memorizing information required in order to calculate time taken to carry out the printing job of said print data,
A printing time prediction process of predicting printing time which is the time which said printing job takes from said information memorized and a state of said printing job means by calculation,
A notice time calculating process which computes notice time which should notify of a stop of said print operation based on said predicted printing time and timing a stop of print operation of said printing job means is instructed to be at the time of a start of a printing job of print data, or an end,
A data-processing control method characterized by preparation ******.
[Claim 15]A computer contained in a data processing device which is used for a printing system provided with a printing job means which carries out the printing job of the print data which should be printed, and processes said print data,
A memory measure which memorizes information required in order to calculate time taken to carry out the printing job of said print data,
a printing time prediction means which predicts printing time which is the time which said printing job takes from said information memorized and a state of said printing job means by calculation -- and
A notice time calculating means which computes notice time which should notify of a stop of said print operation based on said predicted printing time and timing a stop of print operation of said printing job means is instructed to be at the time of a start of a printing job of print data, or an end,
A recording medium with which a data-processing control program making it function by carrying out was recorded.
[Detailed Description of the Invention]
[0001]
[Field of the Invention]On the occasion of a printing job, a user points to the stop of print operation beforehand, and this invention belongs to the technical field of the recording medium which recorded the printing system, printing method, and printing control program which notify a user of the stop of print operation to predetermined timing.
[0002]
[Description of the Prior Art]Conventionally, in a printing system, the printing system which performs a printing job one by one is common, two or more users sharing and using a printer via a network etc. from a viewpoint of effective use of resources, and managing the print data from each user by the executive unit called a print job. Usually at such a printing system, printing with a printer is performed only by the operation from a computer terminal, without troubling each user.
[0003]By the way, since the gestalt of printing is various, when printing, for example on a special paper, it may be necessary to perform with a printer the situation where it cannot respond but sheet replacing etc. must be worked themselves [user], and the maintenance of a printer. In this case, in order that a user may go to the installation place of a printer and may work sheet replacing, a maintenance, etc., when its printing job is performed, it is necessary [it] to once stop a working printer. And operating a printer again and making a printing job resume after completing necessary work is often performed.
[0004]
[Problem(s) to be Solved by the Invention]However, in the above-mentioned conventional printing system, in order to do work which the specific user mentioned above, when stopping a printer manually has many users in the printing waiting of a print job, there is the following trouble. Namely, it cannot be judged when the print job of the user who is going to stop a printer is started, After requesting to wait after going to the installation place of a printer, or to have you wait for printing to other users, it is not an easy thing anyway for which a stop is operated

and which must be able to lend.
[0005]Since there is also a thing which can set up a halt command depending on a printer, using such a model is also considered, but when a printer is stopped by a halt command, the timing of the stop cannot be judged too. Therefore, the situation neglected while the printer had been suspended will arise and a great trouble will attain to the following user who waits for the turn of a print job.
[0006]As mentioned above, in the conventional printing system, there was a problem in that it cannot be coped with appropriately to the necessity of stopping a printer from the request of a user's operation etc.
[0007]Then, by having made this invention in view of the aforementioned problem, and pointing to a stop of a printer beforehand when printing a user, and also notifying a stop of a printer in desired timing, A printing system with a user able to do easily operation proper at the time of a printer stop, and work, Let it be a technical problem to provide the recording medium with which the recording medium with which the printing method and the printing control program were recorded, the data processing device used for a printing system, the data-processing control method, and the data-processing control program were recorded.
[0008]
[Means for Solving the Problem]In order to solve the above-mentioned technical problem, the printing system according to claim 1, In a printing system provided with a printing job means which carries out the printing job of the print data which should be printed, While directing beforehand a stop of print operation of said printing job means on the occasion of a printing demand of said print data at the time of a start of a printing job of the print data concerned, or an end, It is considered as the having-directing means [which directs timing which notifies of a stop of the print operation concerned], and announcement means which notifies of stop of print operation concerned to timing directed by said directing means feature.
[0009]According to the printing system according to claim 1, timing which directions are beforehand carried out by directing means and notifies of the stop collectively in the case of a printing demand of print data in order to suspend print operation of a printing job means when a printing job of the print data concerned is begun or completed is also directed. And if timing of which it should notify comes, it will be notified of a stop of print operation by announcement means. Therefore, while print operation stops without operation at the time of print data actually being printed automatically, a user is made to recognize that print operation stopped in desired timing.
[0010]In the printing system according to claim 1 the printing system according to claim 2, A memory measure which memorizes information required in order to calculate time taken to carry out the printing job of said print data, A printing time prediction means which predicts printing time which is the time which said printing job takes from said information memorized and a state of said printing job means by calculation, Based on timing directed by said predicted printing time and said directing means, a notice time calculating means which computes notice time which should notify of a stop of said print operation further, While having, said announcement means notifies of a stop of said print operation in said computed notice time.
[0011]According to the printing system according to claim 2, a predicted value of printing time which a printing job takes by a printing time prediction means is beforehand calculated from information memorized by memory measure and a state of a printing job means. And if this notice time comes while notice time of a stop of print operation is computed by notice time calculating means based on timing which was instructed to be a predicted value of this printing time and of which it should notify, it will be notified of a stop of print operation by announcement means. Therefore, printing time is actually specified before a printing job start, and a user is made to recognize that print operation stopped in timing of a request on the basis of the printing time.
[0012]In the printing system according to claim 1 or 2, the printing system according to claim 3 said printing system, Two or more client apparatus which generate said print data, and a printer which prints said print data are the systems connected by a network, and said directing means, While pointing to the partner point which should notify of a stop of said print operation

beforehand and including a user of a specific client apparatus connected by said network, or an administrator of said network in the partner point concerned, Said announcement means notifies of a stop of said print operation via said network to said directed partner point.
[0013]A user of a specific client apparatus which was connected to a network according to the printing system according to claim 3, Or the partner point including a network administrator is beforehand directed by a directing means as the partner point of which it should notify, and it is notified of a stop of print operation by announcement means via a network to this partner point. Therefore, it is made to recognize also not only to a real user but to other users on a network and a network administrator that print operation stopped.
[0014]In the printing system according to claim 3, the printing system according to claim 4 from claim 1 said directing means, While directing beforehand a reason for a stop of said print operation of which it should notify, said announcement means is faced notifying of a stop of said print operation, and notifies of a reason for said directed stop collectively.
[0015]According to the printing system according to claim 4, a reason for a stop of print operation is beforehand directed by a directing means, and it is collectively notified of a reason for the stop concerned by announcement means in the case of a notice of a stop of print operation. Therefore, it is made to recognize to a user etc. with a cause of the stop that print operation stopped.
[0016]In a printing method in a printing system provided with a printing job means which carries out the printing job of the print data which should print the printing method according to claim 5, While directing beforehand a stop of print operation of said printing job means on the occasion of a printing demand of said print data at the time of a start of a printing job of the print data concerned, or an end, It is considered as the having-instruction process [which directs timing which notifies of a stop of the print operation concerned], and notice process of notifying of stop of print operation concerned to timing directed in said instruction process feature.
[0017]According to the printing method according to claim 5, when a printing job of the print data concerned is begun or completed in the case of a printing demand of print data, in an instruction process, directions are beforehand carried out in order to suspend print operation of a printing job means, and timing which notifies of the stop collectively is also directed. And arrival of timing of which it should notify will notify of a stop of print operation in a notice process. Therefore, while print operation stops without operation at the time of print data actually being printed automatically, a user is made to recognize that print operation stopped in desired timing.
[0018]In the printing method according to claim 5 the printing method according to claim 6, A memory process of memorizing information required in order to calculate time taken to carry out the printing job of said print data, A printing time prediction process of predicting printing time which is the time which said printing job takes from said information memorized and a state of said printing job means by calculation, Further, while having a notice time calculating process which computes notice time which should notify of a stop of said print operation based on timing directed in said predicted printing time and said instruction process, Said notice process notifies of a stop of said print operation in said computed notice time.
[0019]According to the printing method according to claim 6, a predicted value of printing time which a printing job takes in a printing time prediction process is beforehand calculated from information memorized by memory measure and a state of a printing job means. And if this notice time comes while notice time of a stop of print operation is computed in a notice time calculating process based on timing which was instructed to be a predicted value of this printing time and of which it should notify, in a notice process, it will be notified of a stop of print operation. Therefore, printing time is actually specified before a printing job start, and a user is made to recognize that print operation stopped in timing of a request on the basis of the printing time.
[0020]In the printing method according to claim 5 or 6, the printing method according to claim 7 said printing method, Two or more client apparatus which generate said print data, and a printer which prints said print data are the printing methods in a system connected by a network, and said instruction process, While pointing to the partner point which should notify of a stop of said

print operation beforehand and including a user of a specific client apparatus connected by said network, or an administrator of said network in the partner point concerned, Said notice process notifies of a stop of said print operation via said network to said directed partner point.
[0021]A user of a specific client apparatus which was connected to a network according to the printing method according to claim 7, Or in an instruction process, the partner point including a network administrator is beforehand directed as the partner point of which it should notify, and it is notified of a stop of print operation in a notice process to this partner point via a network. Therefore, it is made to recognize also not only to a real user but to other users on a network and a network administrator that print operation stopped.
[0022]In the printing method according to claim 7, the printing method according to claim 8 from claim 5 said instruction process, While directing beforehand a reason for a stop of said print operation of which it should notify, said notice process is faced notifying of a stop of said print operation, and notifies of a reason for said directed stop collectively.
[0023]According to the printing method according to claim 8, a reason for a stop of print operation is beforehand directed in an instruction process, and in a notice process, it is collectively notified of a reason for the stop concerned in the case of a notice of a stop of print operation. Therefore, it is made to recognize to a user etc. with a cause of the stop that print operation stopped.
[0024]A recording medium with which the printing control program according to claim 9 was recorded, A computer contained in a printing system provided with a printing job means which carries out the printing job of the print data which should be printed, While directing beforehand a stop of print operation of said printing job means on the occasion of a printing demand of said print data at the time of a start of a printing job of the print data concerned, or an end, It is considered as an announcement means which notifies of a stop of the print operation concerned, and is made to function to timing directed by directing means which directs timing which notifies of a stop of the print operation concerned, and said directing means.
[0025]According to the computer which reads and performs a recording medium with which the printing control program according to claim 9 was recorded. Timing which directions are beforehand carried out by directing means and notifies of the stop collectively in the case of a printing demand of print data in order to suspend print operation of a printing job means when a printing job of the print data concerned is begun or completed is also directed. And if timing of which it should notify comes, it will be notified of a stop of print operation by announcement means. Therefore, while print operation stops without operation at the time of print data actually being printed automatically, a user is made to recognize that print operation stopped in desired timing.
[0026]A recording medium with which the printing control program according to claim 10 was recorded, In a storage with which the printing control program according to claim 9 was memorized, A memory measure which memorizes information required in order to calculate time which takes said computer to carry out the printing job of said print data, A printing time prediction means which predicts printing time which is the time which said printing job takes from said information memorized and a state of said printing job means by calculation, And while making it function further as a notice time calculating means which computes notice time which should notify of a stop of said print operation based on timing directed by said predicted printing time and said directing means, Said announcement means notifies of a stop of said print operation in said computed notice time.
[0027]According to the computer which reads and performs a recording medium with which the printing control program according to claim 10 was recorded, a predicted value of printing time which a printing job takes by a printing time prediction means is beforehand calculated from information memorized by memory measure and a state of a printing job means. And if this notice time comes while notice time of a stop of print operation is computed by notice time calculating means based on timing which was instructed to be a predicted value of this printing time and of which it should notify, it will be notified of a stop of print operation by announcement means. Therefore, printing time is actually specified before a printing job start, and a user is made to recognize that print operation stopped in timing of a request on the basis of the printing

time.
[0028]A recording medium with which the printing control program according to claim 11 was recorded, In a memorized storage, the printing control program according to claim 9 or 10 said printing system, Two or more client apparatus which generate said print data, and a printer which prints said print data are the systems connected by a network, and said directing means, While pointing to the partner point which should notify of a stop of said print operation beforehand and including a user of a specific client apparatus connected by said network, or an administrator of said network in the partner point concerned, Said announcement means notifies of a stop of said print operation via said network to said directed partner point.
[0029]According to the computer which reads and performs a recording medium with which the printing control program according to claim 11 was recorded. The partner point including a user of a specific client apparatus connected to a network or a network administrator is beforehand directed by a directing means as the partner point of which it should notify, and it is notified of a stop of print operation by announcement means via a network to this partner point. Therefore, it is made to recognize also not only to a real user but to other users on a network and a network administrator that print operation stopped.
[0030]A recording medium with which the printing control program according to claim 12 was recorded, In a memorized storage, the printing control program according to claim 11 from claim 9 said directing means, While directing beforehand a reason for a stop of said print operation of which it should notify, said announcement means is faced notifying of a stop of said print operation, and notifies of a reason for said directed stop collectively.
[0031]According to the computer which reads and performs a recording medium with which the printing control program according to claim 12 was recorded, a reason for a stop of print operation is beforehand directed by a directing means, and it is collectively notified of a reason for the stop concerned by announcement means in the case of a notice of a stop of print operation. Therefore, it is made to recognize to a user etc. with a cause of the stop that print operation stopped. A data processing device used for the printing system according to claim 13 is provided with the following.
A memory measure which is a data processing device which is used for a printing system provided with a printing job means which carries out the printing job of the print data which should be printed, and processes said print data, and memorizes information required in order to calculate time taken to carry out the printing job of said print data.
A printing time prediction means which predicts printing time which is the time which said printing job takes from said information memorized and a state of said printing job means by calculation.
A notice time calculating means which computes notice time which should notify of a stop of said print operation based on said predicted printing time and timing a stop of print operation of said printing job means is instructed to be at the time of a start of a printing job of print data, or an end.
According to the data processing device used for the printing system according to claim 13, a predicted value of printing time which a printing job takes by a printing time prediction means is beforehand calculated from information memorized by memory measure and a state of a printing job means. And based on timing which was instructed to be a predicted value of this printing time and of which it should notify, notice time which should notify of a stop of print operation is computed by notice time calculating means. Therefore, it can notify of a stop of print operation by this computed notice time. Therefore, printing time is actually specified before a printing job start, and a user is made to recognize that print operation stopped in timing of a request on the basis of the printing time. A data-processing control method according to claim 14 is provided with the following.
A memory process of being the data-processing control method in a data processing device which is used for a printing system provided with a printing job means which carries out the printing job of the print data which should be printed, and processes said print data, and memorizing information required in order to calculate time taken to carry out the printing job of said print data.

A printing time prediction process of predicting printing time which is the time which said printing job takes from said information memorized and a state of said printing job means by calculation. A notice time calculating process which computes notice time which should notify of a stop of said print operation based on said predicted printing time and timing a stop of print operation of said printing job means is instructed to be at the time of a start of a printing job of print data, or an end.

According to a data-processing control method according to claim 14, a predicted value of printing time which a printing job takes by a printing time prediction process is beforehand calculated from information memorized by memory measure and a state of a printing job means. And notice time of a stop of print operation is computed by notice time calculating process based on timing which was instructed to be a predicted value of this printing time and of which it should notify. Therefore, it can notify of a stop of print operation by this computed notice time. Therefore, printing time is actually specified before a printing job start, and a user is made to recognize that print operation stopped in timing of a request on the basis of the printing time. A recording medium with which the data-processing control program according to claim 14 was recorded, It is used for a printing system provided with a printing job means which carries out the printing job of the print data which should be printed, A computer contained in a data processing device which processes said print data, A memory measure which memorizes information required in order to calculate time taken to carry out the printing job of said print data, A printing time prediction means which predicts printing time which is the time which said printing job takes from said information memorized and a state of said printing job means by calculation, and said predicted printing time, It is considered as a notice time calculating means which computes notice time which should notify of a stop of said print operation based on timing a stop of print operation of said printing job means is instructed to be at the time of a start of a printing job of print data, or an end, and is made to function. According to the computer which reads and performs a recording medium with which the data-processing control program according to claim 15 was recorded, a predicted value of printing time which a printing job takes by a printing time prediction means is beforehand calculated from information memorized by memory measure and a state of a printing job means. And notice time of a stop of print operation is computed by notice time calculating means based on timing which was instructed to be a predicted value of this printing time and of which it should notify. Therefore, it can notify of a stop of print operation by this computed notice time. Therefore, printing time is actually specified before a printing job start, and a user is made to recognize that print operation stopped in timing of a request on the basis of the printing time.

[0032]

[Embodiment of the Invention]Next, the suitable embodiment for this invention is described based on a drawing. The embodiment described below is an embodiment when two or more computers apply this invention to the output control in the case of carrying out joint use of the printer concerned by each computer in the printing system connected to the printer via data converters of 1, such as a data server.

[0033]The composition of the printing system of introduction and an embodiment is explained using drawing 1.

[0034]As shown in drawing 1, the printing system of the embodiment is constituted by the four computers 1 thru/or 4, the data converter 6, the change machine 5 that connects the data converter 6 with each computers 1 thru/or 4, and the printer 7.

[0035]In this composition, each computers 1 thru/or 4 generate the print data which should be carried out a printout in the printer 7 using application software etc., and output them to the change machine 5. Here, as the above-mentioned output data, it is created by the Page Description Language of common knowledge of "PostScript" etc. of Adobe, for example.

[0036]The change machine 5 distributes the below-mentioned indicative data etc. which are outputted from the data converter 6 to each computer while it is provided with the buffer part which memorizes temporarily the print data from each computers 1 thru/or 4 and outputs these print data to the data converter 6 in time sharing for every computer.

[0037]It develops to the print bit map data for carrying out the printout of the print data

transmitted via the change machine 5 from each computers 1 thru/or 4 in the printer 7 using the translation data which the data converter 6 concerned holds, and the data converter 6 is outputted to the printer 7.
[0038]The printer 7 performs a corresponding printout based on the outputted print bit map data.
[0039]Next, the details composition of each component which constitutes the above-mentioned printing system is explained using drawing 2 and drawing 3.
[0040]First, the composition and operation of the computers 1 thru/or 4 are explained using drawing 2 (a). Since the composition and operation of each computers 1 thru/or 4 are the same, it represents with the following explanation and the computer 1 is explained by it.
[0041]As shown in drawing 2 (a), the computer 1, CPU10 which executes each command which reads the program memorized by ROM13 and is included in it, It is constituted by the input part 11 which consists of a keyboard, a mouse, etc., the network connection part 12, ROM (ReadOnly Memory)13 and RAM (Random Access Memory)14, the display 15 that displays a variety of information, and the bus 16.
[0042]In the above-mentioned composition, it is connected to the change machine 5 and the network connection part 12 performs what is called interface operation to the data inputted into the data and the computer 1 which are outputted from the computer 1.
[0043]The input part 11 outputs it to CPU10 grade via the bus 16, when data required for the processing in the computer 1 is inputted.
[0044]ROM13 is a read-only memory which has memorized the program for control of the computer 1 whole, reads a program required of predetermined timing, and outputs it to the bus 16.
[0045]Actually, RAM14 memorizes data required for the processing in CPU10 etc. temporarily, and outputs them to the bus 16 if needed while being constituted by memory storage, such as a hard disk drive, etc. and installing the various control programs in CPU10.
[0046]The display 15 displays the below-mentioned picture and the below-mentioned processing time corresponding to the indicative data Sa while performing a display required for the processing in CPU10.
[0047]CPU10 performs various data processing or control of each above-mentioned component using the program memorized by RAM14.
[0048]Next, the composition and operation of the printer 7 are explained using drawing 2 (b).
[0049]The printer 7 is constituted by CPU17, the network connection part 18, ROM19 and RAM20, the output engines 21, and the bus 21a as shown in drawing 2 (b).
[0050]In this composition, it is connected to the data converter 6 and the network connection part 18 performs interface operation to the print bit map data which should be carried out a printout in the printer 7 concerned inputted into the printer 7.
[0051]CPU17 controls each component which constitutes the printer 7, and performs the printout of the print bit map data concerned.
[0052]ROM19 is a memory which has memorized the program for control of the printer 7 whole, reads a program required of predetermined timing, and outputs it to the bus 21a.
[0053]RAM20 memorizes data required for the processing in CPU17 etc. temporarily, and outputs them to the bus 21a if needed.
[0054]The output engines 21 are provided with printing departments, such as an inkjet method or an electrophotographying system, and perform printout processing of actual print bit map data.
[0055]Next, the composition and operation of the data converter 6 are explained using drawing 3.

[0056]As shown in drawing 3, the data converter 6 The interfaces 22a and 22b, It is constituted by CPU23 which reads and executes the program memorized by ROM36, ROM36 and RAM24, the bit map data generating part 25, the display data generating part 26, the bus 27, and translation data ROM35.
[0057]The bit map data generating part 25 builds in the logic operation circuit which consists of CPU25a, ROM25b, and RAM25c, and the display data generating part 26 builds in the logic operation circuit which consists of CPU26a, ROM26b, and RAM26c. Here, ROM25b has

memorized the program for print-bit-map-data generation, and ROM26b has memorized the required program, when CPU26a controls the display data generating part 26.
[0058]In this composition, the interface 22a performs interface operation to the data from each computers 1 thru/or 4 through the change machine 5, and outputs it to the bus 27.
[0059]While CPU23 controls the data converter 6 whole, based on below-mentioned requirement signal Sr transmitted from each computers 1 thru/or 4, The output to each computers 1 thru/or 4 through the change machine 5 of the below-mentioned indicative data Sa to the printer 7 of the generated below-mentioned print bit map data outputted and generated is performed. By the below-mentioned processing, CPU23 computes the below-mentioned time required and transmits to the computers 1 thru/or 4.
[0060]RAM24 memorizes temporarily the print data Sb from each computers 1 thru/or 4 inputted into the data converter 6, etc., and outputs them to the bus 27 if needed. While memorizing temporarily the print bit map data generated in the below-mentioned bit map data generating part 25 and outputting to the printer 7 via the bus 27, The indicative data Sa generated in the below-mentioned display data generating part 26 is memorized temporarily, and it outputs to the printer 7 via the bus 27 at the computers 1 thru/or 4.
[0061]ROM36 is a read-only memory which has memorized the program for control of the data converter 6 whole, reads a program required of predetermined timing, and outputs it to the bus 27.
[0062]Translation data ROM35 is ROM which has memorized the translation data for changing into print bit map data the print data Sb (page description data created by the Page Description Language) inputted from the computer 1, The translation data concerned is shared in the bit map data generating part 25 and the display data generating part 26. And these are read if needed including the font data 35a what is called corresponding to a character code contained in the conversion rule data 35b and the print data Sb for interpreting each command code in the print data Sb as concrete translation data, and drawing a figure etc.
[0063]The bit map data generating part 25 carries out deployment processing, and is outputted to the print bit map data for carrying out the printout of the print data Sb from each computers 1 thru/or 4 in the printer 7 RAM24. Namely, read the command code and the above-mentioned character code in the print data Sb, and also the conversion rule data 35b or the font data 35a corresponding to each is read from translation data ROM35, The figure corresponding to command code and the font corresponding to a character code are made to memorize by bit map format in the page memory in RAM24.
[0064]In deployment processing in the bit map data generating part 25, print bit map data are generated for every page which actually carries out a printout using the above-mentioned translation data containing the font etc. which are actually used for a printout in the printer 7.
[0065]The interface 22b performs interface processing to data required for the printing job in the printers 7, such as generated print bit map data, and outputs it to the printer 7.
[0066]The display data generating part 26 generates the indicative data Sa for the below-mentioned preview processing using the above-mentioned print data Sb and the above-mentioned translation data corresponding to requirement signal Sr transmitted from each computers 1 thru/or 4. That is, the same processing as generation of the print bit map data in the bit map data generating part 25 generates the bit map format indicative data Sa. Since the translation data from translation data ROM35 will be shared with the bit map data generating part 25 at this time, the indicative data Sa faithful to the actual printout in the printer 7 can be generated.
[0067]Next, the preview processing and the printing job concerning this embodiment are explained using the flow chart shown in drawing 4. In preview processing and the printing job of this embodiment, While the indicative data Sa faithful to the print data Sb which should be carried out a printout in the printer 7 is generated and being displayed on the display 15, the time required at the time of carrying out the printing job of the print data Sb is computed by CPU23, and is transmitted to the computers 1 thru/or 4.
[0068]In the following explanation, since an understanding is easy, while explaining the preview processing and the printing job which used the computer 1, the data converter 6, and the printer

7, processing of processing of the computer 1, the data converter 6, and the printer 7 is explained in parallel. The embodiment described below is an embodiment at the time of using the data converter 6 of composition of not saving this to a printing job start, even if the print data Sb are inputted.

[0069]As shown in drawing 4, in preview processing and the printing job of an embodiment, the print data Sb which should be first carried out a printout in the computer 1 using the printer 7 are generated (Step S1).

[0070]And the generated print data Sb concerned are transmitted to the data converter 6 with requirement signal Sr of preview processing via the change machine 5 (Step S2), and it is received in the data converter 6 concerned (Step S3).

[0071]Next, it is judged whether the operation auxiliary value used in order to calculate the time required at the time of carrying out the printing job of the received print data Sb is memorized by RAM24 (step S4). And when the operation auxiliary value concerned is memorized, estimated calculation of the time required is carried out using the operation auxiliary value concerned (Step S4; yes) (Step S5).

[0072]Here, when the above-mentioned time required is explained, it is desirable to consider it as time until it finishes printing it as the time required concerned from the generation start of the print bit map data in the bit map data generating part 25. For this reason, in calculation of the time required by Step S5, The time which generation of print bit map data takes, While computing by analyzing the contents of print data, the time from the completion of generation of print bit map data to the end of printing, It computes by adding the time proportional to the predetermined printing size corresponding to printing size currently beforehand computed by the experiment etc. to the rough value of the time required required by transmission to the printer 7 of print bit map data.

[0073]The thing based on the actual measurement at the time of generating the indicative data for preview processing in Step S10 mentioned later may be sufficient as the time which generation of print bit map data takes. In this case, the time required can be found more nearly promptly. It is good also as time when a actual printout is printed with the printer 7.

[0074]In addition, as the time required, it is good also as time from the generation start of the print bit map data in the bit map data generating part 25 to the end of generation, and, for example. It is good also as time to the transmission to the time to the completion of transmission to the printer 7 of the print bit map data from the generation start of the print bit map data in the bit map data generating part 25, or other memory storage. A printout is actually good also as time printed with the printer 7.

[0075]It is not from the print-bit-map-data generation start corresponding to the target print data, and suppose that it is the time of commencement of the time required from the time when the print data concerned were sent to the data converter 6. In that case, the time required can compute the time which processing of the print data which should be processed ahead of the print data concerned takes by adding to the above-mentioned time required.

[0076]Next, when the above-mentioned operation auxiliary value is explained, the operation auxiliary value concerned, When the same print data Sb are inputted into the data converter 6, it is an auxiliary value used in the case of the operation of the above-mentioned time required of the 2nd henceforth, and once it is computed about the one print data Sb, it memorizes in RAM24 like the after-mentioned.

[0077]And as a concrete value of the operation auxiliary value concerned, May memorize the time required itself calculated [above-mentioned] as an operation auxiliary value corresponding to the print data Sb concerned, and, It is unit size (.) about time to change in proportion to printing size (magnifying power or reduction percentage) among time required for a printing job. That is, it does not depend on printing size, but it may divide at fixed time (only hereafter referred to as "b".), and the value (only hereafter referred to as "a".) which **(ed) in time at the time of printing the case where it prints with magnifying power 1.0 to the print data Sb may be memorized at it. The time required which is actually required in the case of the latter,

Time required =ax(printing size) +b

It is computable by carrying out.

[0078]The time actually printed with the printer 7 sets time to be proportional to the length direction printing size to c,
Time required =ax(printing size) +b+cx (the length direction printing size)
It can come out and compute. This value is the press speed of the printer 7, and time not to be dependent on sizes, such as loading of a paper, is contained in b.
[0079]Here, as time to change in proportion to the above-mentioned printing size, there is time which the conversion to bit map data from vector data takes, time for a bit map data transfer, or time for transmitting print bit map data to the printer 7, for example.
[0080]It does not depend on printing size but there are time for syntax analysis of the print data Sb, time for the coordinate conversion of vector data, etc. as fixed time.
[0081]If the time required calculates by said explained method (Step S5), Next, the time required information corresponding to the time required concerned is replied to the computer 1 (Step S8), this is received in the computer 1, the time required concerned is displayed on the display 15, and a user is notified (step S9).
[0082]When the operation auxiliary value is not memorized in the judgment of step S4 on the other hand, When the received print data Sb are the print data Sb which do not have till then preview processing or that the printing job was carried out, namely, the (step S4; no), Next, based on the print data Sb concerned, while carrying out estimated calculation of the above-mentioned time required by CPU23, the above-mentioned operation auxiliary value is computed (Step S6). And it memorizes to RAM24 with the information for identifying the print data Sb which correspond the computed operation auxiliary value concerned (Step S7).
[0083]By backing up, for example by a cell etc. or carrying out fixation, the field in RAM24 which memorizes an operation auxiliary value is constituted so that the operation auxiliary value which has memorized the power supply of the data converter 6 also as ** may not disappear.
[0084]After memory of an operation auxiliary value is completed, it shifts to the above-mentioned step S8 and S9.
[0085]Next, the print data Sb in which the display data generating part 26 is memorized by RAM24 in the data converter 6, The indicative data Sa which should be displayed on the display 15 using the translation data containing the above-mentioned font data 35a, the conversion rule data 35b, etc. is generated (Step S10). (deployment) At this time, the generated indicative data Sa is bit map format data of the almost same mode as a mode (modes, such as character style, a size of a character, the whole layout, and color arrangement) when actually carrying out the printout of the print data Sb.
[0086]And the generated indicative data Sa is transmitted to the computer 1 (Step S11).
[0087]Next, if the indicative data Sa concerned is received in the computer 1 (Step S12), The picture (picture corresponding to the indicative data Sa) which was mostly in agreement with the mode when carrying out the printout of the picture Sb corresponding to the indicative data Sa concerned, i.e., the print data, in the printer 7 is displayed on the display 15, and a user checks this (Step S13).
[0088]And if the input of the supplementary information at the time of actually performing printing (for example, the above-mentioned printing size at the time of printing) is performed in the computer 1 (Step S14), Next, indicative data (directive command) is transmitted with the print data Sb as requirement signal Sr in which it is shown whether a printout is actually started from the computer 1 (Step S15).
[0089]Next, if the indicative data concerned and the print data Sb are received in the data converter 6 (Step S16), the above-mentioned time required corresponding to the received print data Sb will be calculated using an operation auxiliary value, and the corresponding (Step S17) time required will be transmitted to the computer 1 (Step S18). And the time required corresponding to the time required information transmitted in the computer 1 is displayed, and a user is notified (Step S19).
[0090]In the data converter 6, are parallel with the above-mentioned step S19, The print data Sb memorized by RAM24 are developed to print bit map data by the bit map data generating part 25, it outputs to the printer (Step S20) 7, and printing is performed using the output engines 21 in the printer 7 (Step S21).

[0091]And if a printout is completed, the print data Sb memorized by RAM24 will be deleted and processing (Step S22) will be ended.
[0092]The information displayed in the above-mentioned step S19 may be changed and displayed on the residual time to the end of a printing job other than the time required itself mentioned above, and may compute and display schedule finish time. The rate of lapsed time over the whole time required may be computed and displayed. Conversion to these information to display is [in / at the above-mentioned step S18 / Step S19] possible.
[0093]Next, in the notice processing of a printing stop concerning this embodiment, the setting operation performed by computer 1 is explained based on the setting screen on the display 15 of the computer 1 shown in drawing 5. In this embodiment, while suspending the printing job which it is going to perform at the time of a start of printing or the end of printing, when transmitting the notice of a printing stop from the data converter 6 to predetermined timing, reporting timing, a notice content, etc. are beforehand set up by computer 1. Under the present circumstances, the user of the computer 1 inputs a setting detail by operating the keyboard in the input part 11, a mouse, etc. And according to a setting detail, a printing stop and processing of the notice are performed in the data converter 6. Said setting operation in the computer 1 is incorporable as one function of application software, such as a printing job.
[0094]As shown in drawing 5, the setting screen displayed on the display 15 of the computer 1 is displayed to the existence of a halt, reporting timing, a report destination, and each setting-out item of a notice content in order to perform the following setting out. In the setting screen of drawing 5, one inputted item accepts it, it can choose, the radio button displayed by O and two or more inputted items can be chosen, and there are input methods, such as an input by the check box and character string which are displayed by **.
[0095]The existence of halt execution of printing is chosen as the item of a "halt" by setting one of "it carries out" and "not carrying out" up. One side or both "before printing" and "after printing" can be set up as printing stop timing. For example, in order to once stop the printer 7 just before a start of printing and to perform sheet replacing to print on a special paper, set up "before printing", but. It is desirable to, carry out setting out "after printing" in addition in a case which is made to suspend the printer 7 again at the time of the end of printing, and is returned to the original paper.
[0096]It is set [of a "start of printing" or "an end of printing"] to the item of "reporting timing" whether it notifies in front by inputting a numerical value. Here, since the actual notice needs to transmit before printing execution, based on the processing which mentioned above the start-of-printing time and printing end time of the print job which should be performed, it asks by performing estimated calculation, and the actual timing which notifies based on this value is determined by the data converter 6. The processing performed by this data converter 6 is attached and mentioned later.
[0097]If the setting detail of the "halt" of printing mentioned above is set up "before printing", If the numerical value which shows whether reporting timing is a front on the basis of the time of a start of printing is inputted and the setting detail of the "halt" is set up "after printing", reporting timing will input the numerical value which shows whether it is a front on the basis of the time of the end of printing. Here, if the numerical value to input is set to "0", it can set up so that a notice may be performed simultaneously with the end of printing simultaneously with a start of printing.
[0098]The "user" who is a user who considers it as the partner point which should transmit a notice to the item of a "report destination", and performs setting operation by computer 1, The "appointed address" which is a contact of other users who can transmit a notice can be set up with the character string which shows address information via the "administrator" who manages the printing system on a network, and a network, respectively. It can set up combining these three freely, it overlaps, and a notice can be transmitted.
[0099]A "specification message" can be set to the item of a "notice content" with the character string of arbitrary messages as "sheet replacing", a "maintenance", and other reasons as a reason for a printing stop, respectively. For example, what is necessary is to set up "sheet replacing", when performing sheet replacing to the special paper mentioned above, and just to

set up a "maintenance", when performing head cleaning of the printer 7, etc. It can also set up combining three sorts of these reasons freely. The notice content set up here is transmitted to a report destination as a message which tells the reason for a printing stop.
[0100]When the data of each item set up by the setting operation of the computer 1 explained above transmits print data to the data converter 6 by printing demand, it is added to print data and transmitted to the data converter 6. It is possible for it not to be limited to each item mentioned above as a setting-out item, and to add items, such as a user's user name, a print job name, and halt execution time, besides this.
[0101]Next, in the notice processing of a printing stop concerning this embodiment, it is set up by computer 1 and the flow chart shown in drawing 6 explains the generation processing of the notice data generated by the data converter 6 based on the information set transmitted to the data converter 6 with print data.
[0102]As shown in drawing 6, in the data converter 6, distinction of the contents of an information set of the computer 1 which received is performed one by one. First, in an information set, the existence of setting out of a "halt" of printing is distinguished (Step S31). If a "halt" is set up for "not carrying out" (Step S31; NO), subsequent processings will not be performed but processing will be ended promptly.
[0103]If a "halt" is set up for "carrying out" (Step S31; YES), it will be distinguished whether a halt of printing is set to the standard in the time of the start of a printing job (Step S32). If the setting detail which shows the point back of printing inputted along with setting out of a "halt" is set up "before printing" (Step S32; YES), the notice time of the printing stop on the basis of the time of a start of printing will be calculated (Step S33).
[0104]Here, the calculation method of the notice time concerned is explained. First, as mentioned above, estimated calculation of the start-of-printing time of the print job which is the target of a halt is carried out, and it is memorized in the data converter 6. Calculation of notice time for which it should ask based on the time of the reporting timing which makes a start of printing the starting point of reckoning among this value and the received information set is performed. Specifically, the value which reduced and found the time of the above-mentioned reporting timing from start-of-printing time is set as notice time. This start-of-printing time is set also as printing stop time. On the other hand, if the "halt" is not set up as "before printing" (Step S32; NO), processing of Step S33 is not performed.
[0105]Subsequently, it is distinguished whether a halt of printing is set to the standard in the time of the end of a printing job (Step S34). If a "halt" is set up as "after printing" (Step S34; YES), the notice time of the printing stop on the basis of the time of the end of printing will be calculated (Step S35).
[0106]Calculation of the notice time concerned is performed by carrying out based on the preset value of the printing end time which mentioned above the print job which is the target of a halt and by which estimated calculation was carried out, and the time of the "reporting timing" which makes the received end of printing of an information set the starting point of reckoning. Specifically, the value which reduced and found the time of the above-mentioned reporting timing from printing end time is set as notice time. This printing end time is set also as printing stop time. On the other hand, if the "halt" is not set up as "after printing" (Step S34; NO), processing of Step S35 is not performed.
[0107]Subsequently, it carries out from Step S36, applying the processing corresponding to the reason for a halt of printing to Step S40.
[0108]First, it is distinguished whether the reason for a halt of printing is sheet replacing (Step S36). In an information set, if the "notice content" is set up as "sheet replacing" (Step S36; YES), it will set to the character string which shows the stoppage reason in notice data with "print sheet exchange" (Step S37). On the other hand, if the "notice content" is not set up as "sheet replacing" (Step S36; NO), processing of Step S37 is not performed.
[0109]Then, it is distinguished whether the reason for a halt of printing is a maintenance (Step S38). In an information set, if the "notice content" is set up as a "maintenance" (Step S38; YES), it will set to the character string which shows the stoppage reason in notice data with a "maintenance" (Step S39). On the other hand, if the "notice content" is not set up as a

"maintenance" (Step S38; NO), processing of Step S39 is not performed.
[0110]When there is a character string which shows the inputted message as inside of an information set "specification message" when setting up the reason for a halt of printing, this is extracted and it is considered as the comment message in notice data (Step S40).
[0111]Subsequently, it reads based on the memory content which is having the print job name over a user's print data which suspended printing spooled, and sets as a print job name in notice data (Step S41). under the present circumstances, the user name of a print job is also read and it sets as a user name in notice data, [rank second and] In an information set, the address information to which a notice should be transmitted is extracted from the contents set up as a "report destination" of a halt of printing, and it sets as a report destination in notice data (Step S42).
[0112]The notice data generated as a result of the above processing is rearranged and registered into the last according to an order of the notice time computed by above-mentioned processing (Step S43). And if arrival of the notice time of the earliest notice data is supervised among each rearranged data and the notice time comes, the contents of notice data will be transmitted to the report destination which should transmit a notice including stop time, a print job name, a user name, a stoppage reason, and a comment.
[0113]Next, the notice data registered as mentioned above is transmitted as a notification message to a report destination, and the display example in the case of being displayed on the display of a report destination, etc. is explained using drawing 7.
[0114]As shown in drawing 7, the display screen as which a notification message is displayed in a report destination displays a required item in the data content set to notice data according to the processing mentioned above. The transmission of the notification message to a report destination can use the E-mail which passed the network, for example.
[0115]The message of "a printer halt" which the concrete display item in drawing 7 reports that a halt of printing is, Each item, such as a "comment" etc. which "stoppage reasons", such as "stop time", a "print job" which is the targets of a halt, a "user" who performs the print job, and sheet replacing, and a user inputted, is included.
[0116]The user who received the notice, or other users can recognize that print operation stopped or that it is predicted that it stops transmission of the notification message for notifying of a halt of the above printing, and by performing the display. The stop time of print operation can be recognized collectively. Moreover, this user that performed setting out of the halt can also recognize the timing which its printing job starts or ends by receiving a notice. Therefore, this user that set up a halt, Can do the work which should be done exactly and promptly including the preparation, and other users, Since a printing stop is not prolonged more than needed, a big effect is acquired by delay of each print job remaining in the minimum, and applying this embodiment to a printing system, since other users who received the notice can respond based on the information about the printing stop which came to hand.
[0117]In each above-mentioned embodiment, although the data converter 6 and the printer 7 were explained as a separate independent device, it is also possible to give the function as the above-mentioned data converter to the printer itself besides this. In this case, the program which shows operation concerning this invention can be built in in a printer as what is called a RIP (Raster Image Processer) program for developing the print data from a computer to bit map data.
[0118]As for the printing control program in the printing system concerning this invention mentioned above, it is possible to make it record on recording media, such as CD-ROM which can be read, and a floppy disk, in the computer on a network. And the printing system of this invention is realized by installing and executing a printing control program in a computer using the CD-ROM concerned etc.
[0119]
[Effect of the Invention]Since it notified of the stop of print operation when according to the printing system according to claim 1 it pointed to the notification timing of a stop and stop of print operation on the occasion of the printing job of print data and became notification timing, as explained above, A user is made to recognize that stopped print operation without any

operation automatically, and print operation stopped in desired timing. Therefore, a user's burden is eased, and after suppressing the influence which it has on other users' printing job, it makes it possible to do work proper at the time of a printing stop.
[0120]Since it notified of the stop of print operation when according to the printing system according to claim 2 the notice time of the stop of print operation was computed and this notice time came based on the predicted value and notification timing of printing time which were calculated beforehand, A user is made to recognize that print operation stopped in the timing of the request on the basis of the printing time actually specified before the printing job start. Therefore, the user can judge a printing stop earlier than the time of a actual printing stop, and since preparation etc. of the work which should be done at the time of a printing stop can be made, a user's burden is eased further.
[0121]Since the user of the specific client apparatus on a network and the network administrator were made to do it with the partner point of the notice of a printing stop according to the printing system according to claim 3, It is made to recognize also not only to a real user but to other users on a network and a network administrator that print operation stopped. Therefore, the information on a printing stop can be reported over the wide range, and it makes it possible to suppress further the influence which it has on other users' printing job.
[0122]Since according to the printing system according to claim 4 the reason for the stop of print operation is combined with the notice of a stop of print operation and it notified of it, it is made to recognize to a user etc. with the cause of the stop that print operation stopped. Therefore, when printing stops, it makes it possible to carry out exact management based on the cause of the printing stop.
[0123]Since it notified of the stop of print operation when according to the printing method according to claim 5 it pointed to the notification timing of a stop and stop of print operation on the occasion of the printing job of print data and became notification timing, A user is made to recognize that stopped print operation without any operation automatically, and print operation stopped in desired timing. Therefore, a user's burden is eased, and after suppressing the influence which it has on other users' printing job, it makes it possible to do work proper at the time of a printing stop.
[0124]Since it notified of the stop of print operation when according to the printing method according to claim 6 the notice time of the stop of print operation was computed and this notice time came based on the predicted value and notification timing of printing time which were calculated beforehand, A user is made to recognize that print operation stopped in the timing of the request on the basis of the printing time actually specified before the printing job start. Therefore, the user can judge a printing stop earlier than the time of a actual printing stop, and since preparation etc. of the work which should be done at the time of a printing stop can be made, a user's burden is eased further.
[0125]Since the user of the specific client apparatus on a network and the network administrator were made to do it with the partner point of the notice of a printing stop according to the printing method according to claim 7, It is made to recognize also not only to a real user but to other users on a network and a network administrator that print operation stopped. Therefore, the information on a printing stop can be reported over the wide range, and it makes it possible to suppress further the influence which it has on other users' printing job.
[0126]Since according to the printing method according to claim 8 the reason for the stop of print operation is combined with the notice of a stop of print operation and it notified of it, it is made to recognize to a user etc. with the cause of the stop that print operation stopped. Therefore, when printing stops, it makes it possible to carry out exact management based on the cause of the printing stop.
[0127]According to the computer which reads and performs the recording medium with which the printing control program according to claim 9 was recorded. Since it notified of the stop of print operation when it pointed to the notification timing of a stop and stop of print operation on the occasion of the printing job of print data and became notification timing, a user is made to recognize that stopped print operation without any operation automatically, and print operation stopped in desired timing. Therefore, a user's burden is eased, and after suppressing the

influence which it has on other users' printing job, it makes it possible to do work proper at the time of a printing stop.
[0128]According to the computer which reads and performs the recording medium with which the printing control program according to claim 10 was recorded. Since it notified of the stop of print operation when the notice time of the stop of print operation was computed and this notice time came based on the predicted value and notification timing of printing time which were calculated beforehand, A user is made to recognize that print operation stopped in the timing of the request on the basis of the printing time actually specified before the printing job start. Therefore, the user can judge a printing stop earlier than the time of a actual printing stop, and since preparation etc. of the work which should be done at the time of a printing stop can be made, a user's burden is eased further.
[0129]According to the computer which reads and performs the recording medium with which the printing control program according to claim 11 was recorded. Since the user of the specific client apparatus on a network and the network administrator were made to do it with the partner point of the notice of a printing stop, it is made to recognize also not only to a real user but to other users on a network and a network administrator that print operation stopped. Therefore, the information on a printing stop can be reported over the wide range, and it makes it possible to suppress further the influence which it has on other users' printing job.
[0130]Since according to the computer which reads and performs the recording medium with which the printing control program according to claim 12 was recorded the reason for the stop of print operation is combined with the notice of a stop of print operation and it notified of it, it is made to recognize to a user etc. with the cause of the stop that print operation stopped. Therefore, when printing stops, it makes it possible to carry out exact management based on the cause of the printing stop.
[0131]According to the data processing device used for the printing system according to claim 13. Since it enabled it to notify of the stop of print operation when the notice time of the stop of print operation was computed and this notice time came based on the predicted value and notification timing of printing time which were calculated beforehand, A user is made to recognize that print operation stopped in the timing of the request on the basis of the printing time actually specified before the printing job start. Therefore, the user can judge a printing stop earlier than the time of a actual printing stop, and since preparation etc. of the work which should be done at the time of a printing stop can be made, a user's burden is eased further.
[0132]If according to the data-processing control method according to claim 14 the notice time of a stop of print operation is computed and this notice time comes based on the predicted value and notification timing of printing time which were calculated beforehand, Since it enabled it to notify of the stop of print operation, a user is made to recognize that print operation stopped in the timing of the request on the basis of the printing time actually specified before the printing job start. Therefore, the user can judge a printing stop earlier than the time of a actual printing stop, and since preparation etc. of the work which should be done at the time of a printing stop can be made, a user's burden is eased further.
[0133]According to the computer which reads and performs the recording medium with which the data-processing control program according to claim 15 was recorded. Since it enabled it to notify of the stop of print operation when the notice time of the stop of print operation was computed and this notice time came based on the predicted value and notification timing of printing time which were calculated beforehand, A user is made to recognize that print operation stopped in the timing of the request on the basis of the printing time actually specified before the printing job start. Therefore, the user can judge a printing stop earlier than the time of a actual printing stop, and since preparation etc. of the work which should be done at the time of a printing stop can be made, a user's burden is eased further.
[Brief Description of the Drawings]
[Drawing 1]It is a block diagram showing the composition of the printing system of this embodiment.
[Drawing 2]It is a block diagram showing the details composition of a computer and a printer, and (a) is a block diagram showing the details composition of a computer, and (b) is a block diagram

showing the details composition of a printer.
[Drawing 3]It is a block diagram showing the details composition of a data converter.
[Drawing 4]It is a flow chart which shows operation of preview processing of this embodiment, and a printing job.
[Drawing 5]It is an explanatory view showing the setting screen of the notice of a printing stop of this embodiment.
[Drawing 6]It is a flow chart which shows operation of the generation processing of the notice data of the printing stop of this embodiment.
[Drawing 7]It is an explanatory view showing the display example in the report destination of the printing stop of this embodiment.
[Description of Notations]
1, 2, 3, 4 -- Computer
5 -- Change machine
6 -- Data converter
7 -- Printer
10, 17, 23, 25a, 26 a--CPU
11 -- Input part
12, 18 -- Network connection part
13, 19, 25b, 26b, 36 -- ROM
14, 20, 24, 25c, 26 c--RAM
15 -- Display
16, 21a, 27 -- Bus
21 -- Output engines
22a, 22b -- Interface
25 -- Bit map data generating part
26 -- Display data generating part
35 -- Translation data ROM
Sa -- Indicative data
Sb -- Output data
Sr -- Requirement signal

[Translation done.]

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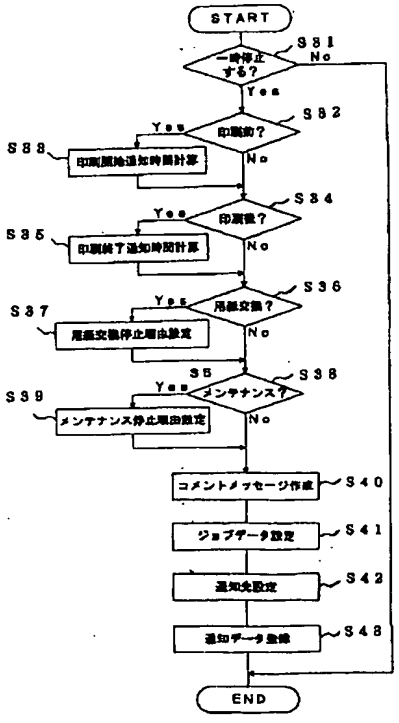
(54)【発明の名称】　印刷システム及び印刷方法並びに印刷制御プログラムが記録された記録媒体

(57)【要約】

【課題】　印刷処理に際し印刷動作の停止を使用者が予め設定し、所定のタイミングで印刷動作の停止を告知する印刷システムを提供する。

【解決手段】　使用者から受信した設定データが、印刷停止を行う設定であれば（ステップＳ３１；Ｙｅｓ）、その印刷停止が印刷の前か後かを判別し（ステップＳ３２、ステップＳ３４）、それぞれ対応する通知時間計算を行う（ステップＳ３３、ステップＳ３５）。次いで、印刷停止の理由を判別し（ステップＳ３６、ステップＳ３８）、対応する停止理由を設定し（ステップＳ３７、ステップＳ３９）、コメントメッセージを作成し（ステップＳ４０）、ジョブデータを設定し（ステップＳ４１）、通知先を設定し（ステップＳ４２）、最後に、生成した通知メッセージを登録し（ステップＳ４３）、通知処理を待つ。



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【特許請求の範囲】

【請求項１】　印刷すべき印刷データを印刷処理する印刷処理手段を備えた印刷システムにおいて、

前記印刷データの印刷要求に際し、当該印刷データの印刷処理の開始時又は終了時に前記印刷処理手段の印刷動作の停止を予め指示するとともに、当該印刷動作の停止を告知するタイミングを指示する指示手段と、

前記指示手段により指示されたタイミングにて、当該印刷動作の停止を告知する告知手段と、

を備えること特徴とする印刷システム。

【請求項２】　前記印刷データを印刷処理するのに要する時間を計算するために必要な情報を記憶する記憶手段と、

前記記憶されている情報と前記印刷処理手段の状態とから前記印刷処理に要する時間である印刷時間を計算により予測する印刷時間予測手段と、

前記予測された印刷時間と前記指示手段により指示されたタイミングとに基づき前記印刷動作の停止を告知すべき告知時間を算出する告知時間算出手段と、

を更に、備えるとともに、

前記告知手段は、前記算出された告知時間において、前記印刷動作の停止を告知することを特徴とする請求項１に記載の印刷システム。

【請求項３】　前記印刷システムは、前記印刷データを生成する複数のクライアント装置と、前記印刷データを印刷するプリンタがネットワークにより接続されたシステムであって、

前記指示手段は、更に、前記印刷動作の停止を告知すべき相手先を予め指示し、当該相手先には前記ネットワークにより接続された特定のクライアント装置のユーザあるいは前記ネットワークの管理者を含むとともに、

前記告知手段は、前記指示された相手先に対し前記ネットワークを介して前記印刷動作の停止を告知することを特徴とする請求項１又は請求項２に記載の印刷システム。

【請求項４】　前記指示手段は、更に、告知すべき前記印刷動作の停止の理由を予め指示するとともに、

前記告知手段は、前記印刷動作の停止を告知するに際し、前記指示された停止の理由を併せて告知することを特徴とする請求項１から請求項３に記載の印刷システム。

【請求項５】　印刷すべき印刷データを印刷処理する印刷処理手段を備えた印刷システムにおける印刷方法において、

前記印刷データの印刷要求に際し、当該印刷データの印刷処理の開始時又は終了時に前記印刷処理手段の印刷動作の停止を予め指示するとともに、当該印刷動作の停止を告知するタイミングを指示する指示工程と、

前記指示工程において指示されたタイミングにて、当該印刷動作の停止を告知する告知工程と、

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を備えること特徴とする印刷方法。

【請求項６】　前記印刷データを印刷処理するのに要する時間を計算するために必要な情報を記憶する記憶工程と、

前記記憶されている情報と前記印刷処理手段の状態とから前記印刷処理に要する時間である印刷時間を計算により予測する印刷時間予測工程と、

前記予測された印刷時間と前記指示工程において指示されたタイミングとに基づき前記印刷動作の停止を告知すべき告知時間を算出する告知時間算出工程と、

を更に、備えるとともに、

前記告知工程は、前記算出された告知時間において、前記印刷動作の停止を告知することを特徴とする請求項５に記載の印刷方法。

【請求項７】　前記印刷方法は、前記印刷データを生成する複数のクライアント装置と、前記印刷データを印刷するプリンタがネットワークにより接続されたシステムにおける印刷方法であって、

前記指示工程は、更に、前記印刷動作の停止を告知すべき相手先を予め指示し、当該相手先には前記ネットワークにより接続された特定のクライアント装置のユーザあるいは前記ネットワークの管理者を含むとともに、

前記告知工程は、前記指示された相手先に対し前記ネットワークを介して前記印刷動作の停止を告知することを特徴とする請求項５又は請求項６に記載の印刷方法。

【請求項８】　前記指示工程は、更に、告知すべき前記印刷動作の停止の理由を予め指示するとともに、

前記告知工程は、前記印刷動作の停止を告知するに際し、前記指示された停止の理由を併せて告知することを特徴とする請求項５から請求項７に記載の印刷方法。

【請求項９】　印刷すべき印刷データを印刷処理する印刷処理手段を備えた印刷システムに含まれるコンピュータを、

前記印刷データの印刷要求に際し、当該印刷データの印刷処理の開始時又は終了時に前記印刷処理手段の印刷動作の停止を予め指示するとともに、当該印刷動作の停止を告知するタイミングを指示する指示手段、及び、

前記指示手段により指示されたタイミングにて、当該印刷動作の停止を告知する告知手段、

として機能させることを特徴とする印刷制御プログラムが記録された記録媒体。

【請求項１０】　前記コンピュータを、

前記印刷データを印刷処理するのに要する時間を計算するために必要な情報を記憶する記憶手段、

前記記憶されている情報と前記印刷処理手段の状態とから前記印刷処理に要する時間である印刷時間を計算により予測する印刷時間予測手段、及び、

前記予測された印刷時間と前記指示手段により指示されたタイミングとに基づき前記印刷動作の停止を告知すべき告知時間を算出する告知時間算出手段、

として更に、機能させるとともに、
前記告知手段は、前記算出された告知時間において、前記印刷動作の停止を告知することを特徴とする請求項９に記載の印刷制御プログラムが記憶された記憶媒体。
【請求項１１】　前記印刷システムは、前記印刷データを生成する複数のクライアント装置と、前記印刷データを印刷するプリンタがネットワークにより接続されたシステムであって、
前記指示手段は、更に、前記印刷動作の停止を告知すべき相手先を予め指示し、当該相手先には前記ネットワークにより接続された特定のクライアント装置のユーザあるいは前記ネットワークの管理者を含むとともに、
前記告知手段は、前記指示された相手先に対し前記ネットワークを介して前記印刷動作の停止を告知することを特徴とする請求項９又は請求項１０に記載の印刷制御プログラムが記録された記憶媒体。
【請求項１２】　前記指示手段は、更に、告知すべき前記印刷動作の停止の理由を予め指示するとともに、
前記告知手段は、前記印刷動作の停止を告知するに際し、前記指示された停止の理由を併せて告知することを特徴とする請求項９から請求項１１に記載の印刷制御プログラムが記録された記憶媒体。
【発明の詳細な説明】
【０００１】
【発明の属する技術分野】本発明は、印刷処理に際し印刷動作の停止をユーザが予め指示し、所定のタイミングでユーザに印刷動作の停止を告知する印刷システム、印刷方法、及び、印刷制御プログラムを記録した記録媒体の技術分野に属する。
【０００２】
【従来の技術】従来、印刷システムにおいて、資源の有効利用の観点から、複数のユーザがプリンタをネットワーク等を介して共有して使用し、各ユーザからの印刷データを印刷ジョブと呼ばれる管理単位により管理しつつ、順次印刷処理を行う印刷システムが一般的となっている。このような印刷システムでは、各ユーザを煩わせることなくコンピュータ端末からの操作のみで、プリンタによる印刷が行われるのが通常である。
【０００３】ところで、印刷の形態は多種多様であるため、例えば特殊な用紙に印刷を行う場合など、プリンタでは対応できずユーザ自ら用紙交換等の作業を行わなければならない状況や、プリンタのメンテナンスを行う必要がある場合がある。かかる場合には、ユーザがプリンタの設置箇所に出向き、用紙交換やメンテナンスなどの作業を行うため、自らの印刷処理が行われる際に、動作中のプリンタをいったん停止させることが必要となる。そして、所要の作業が終了後、再びプリンタを動作させ、印刷処理を再開させることがしばしば行われる。
【０００４】
【発明が解決しようとする課題】しかしながら、上記従来の印刷システムにおいて、特定のユーザが上述したような作業を行うため、プリンタを手動で停止させることは、多数のユーザが印刷ジョブの印刷待ちにある場合には、以下のような支障がある。即ち、プリンタを停止させようとするユーザの印刷ジョブがいつ開始されるのか判断できず、プリンタの設置箇所に出向いた上で待っているか、あるいは他のユーザに対し印刷を待ってもらうよう依頼した上で停止の操作をするかせねばならず、いずれにしても容易なことではない。
【０００５】また、プリンタによっては一時停止コマンドの設定が可能なものもあるので、このような機種を使用することも考えられるが、一時停止コマンドによりプリンタを停止させた場合においても、やはりその停止のタイミングは判断できない。よって、プリンタが停止されたまま放置される事態が生じ、印刷ジョブの順番を待つ後続のユーザに多大な迷惑が及ぶこととなる。
【０００６】以上のように、従来の印刷システムにおいては、ユーザの操作等の要請からプリンタを停止させる必要に対し、適切に対処できないという点で問題があった。
【０００７】そこで、本発明は、前記の問題点に鑑みてなされたもので、ユーザーの印刷に際し、プリンタの停止を予め指示し、更にプリンタの停止を所望のタイミングで通知することにより、ユーザがプリンタ停止時に適宜の操作、作業を容易に行うことが可能な印刷システム及び印刷方法並びに印刷制御プログラムを記録した記録媒体を提供することを課題とする。
【０００８】
【課題を解決するための手段】上記の課題を解決するために、請求項１に記載の印刷システムは、印刷すべき印刷データを印刷処理する印刷処理手段を備えた印刷システムにおいて、前記印刷データの印刷要求に際し、当該印刷データの印刷処理の開始時又は終了時に前記印刷処理手段の印刷動作の停止を予め指示するとともに、当該印刷動作の停止を告知するタイミングを指示する指示手段と、前記指示手段により指示されたタイミングにて、当該印刷動作の停止を告知する告知手段とを備えること特徴とする。
【０００９】請求項１に記載の印刷システムによれば、印刷データの印刷要求の際に、当該印刷データの印刷処理の開始又は終了する時に、印刷処理手段の印刷動作を停止するべく予め指示手段により指示がされ、併せてその停止を告知するタイミングも指示される。そして、告知すべきタイミングが到来すると、告知手段により印刷動作の停止が告知される。よって、印刷データが実際に印刷される際の操作なしに、自動的に印刷動作が停止するとともに、所望のタイミングで、印刷動作が停止したことをユーザに認識させる。
【００１０】請求項２に記載の印刷システムは、請求項１に記載の印刷システムにおいて、前記印刷データを印

刷処理するのに要する時間を計算するために必要な情報を記憶する記憶手段と、前記記憶されている情報と前記印刷処理手段の状態とから前記印刷処理に要する時間である印刷時間を計算により予測する印刷時間予測手段と、前記予測された印刷時間と前記指示手段により指示されたタイミングとに基づき前記印刷動作の停止を告知すべき告知時間を算出する告知時間算出手段とを更に、備えるとともに前記告知手段は、前記算出された告知時間において、前記印刷動作の停止を告知することを特徴とする。

【００１１】請求項２に記載の印刷システムによれば、記憶手段に記憶されている情報と、印刷処理手段の状態とから、印刷時間予測手段により印刷処理に要する印刷時間の予測値が前もって計算される。そして、この印刷時間の予測値と、指示された告知すべきタイミングとに基づいて、印刷動作の停止の告知時間が告知時間算出手段により算出されるとともに、この告知時間が到来すると、告知手段により印刷動作の停止が告知される。よって、印刷時間が実際に印刷処理開始の前に特定され、その印刷時間を基準とした所望のタイミングで、印刷動作が停止したことをユーザに認識させる。

【００１２】請求項３に記載の印刷システムは、請求項１又は請求項２に記載の印刷システムにおいて、前記印刷システムは、前記印刷データを生成する複数のクライアント装置と、前記印刷データを印刷するプリンタがネットワークにより接続されたシステムであって、前記指示手段は、更に、前記印刷動作の停止を告知すべき相手先を予め指示し、当該相手先には前記ネットワークにより接続された特定のクライアント装置のユーザあるいは前記ネットワークの管理者を含むとともに、前記告知手段は、前記指示された相手先に対し前記ネットワークを介して前記印刷動作の停止を告知することを特徴とする。

【００１３】請求項３に記載の印刷システムによれば、ネットワークに接続された特定のクライアント装置のユーザ、あるいはネットワークの管理者を含む相手先が、告知すべき相手先として予め指示手段により指示され、この相手先に対して、ネットワークを介して印刷動作の停止が告知手段により告知される。よって、印刷動作が停止したことを、実際のユーザのみならず、ネットワーク上の他のユーザ、ネットワーク管理者に対しても認識させる。

【００１４】請求項４に記載の印刷システムは、請求項１から請求項３に記載の印刷システムにおいて、前記指示手段は、更に、告知すべき前記印刷動作の停止の理由を予め指示するとともに、前記告知手段は、前記印刷動作の停止を告知するに際し、前記指示された停止の理由を併せて告知することを特徴とする。

【００１５】請求項４に記載の印刷システムによれば、印刷動作の停止の理由が予め指示手段により指示され、印刷動作の停止の告知の際、併せて当該停止の理由が告知手段により告知される。よって、印刷動作が停止したことを、その停止の原因とともに、ユーザ等に対して認識させる。

【００１６】請求項５に記載の印刷方法は、印刷すべき印刷データを印刷処理する印刷処理手段を備えた印刷システムにおける印刷方法において、前記印刷データの印刷要求に際し、当該印刷データの印刷処理の開始時又は終了時に前記印刷処理手段の印刷動作の停止を予め指示するとともに、当該印刷動作の停止を告知するタイミングを指示する指示工程と、前記指示工程において指示されたタイミングにて、当該印刷動作の停止を告知する告知工程と、を備えること特徴とする。

【００１７】請求項５に記載の印刷方法によれば、印刷データの印刷要求の際に、当該印刷データの印刷処理の開始又は終了する時に、印刷処理手段の印刷動作を停止するべく予め指示工程において指示がされ、併せてその停止を告知するタイミングも指示される。そして、告知すべきタイミングが到来すると、告知工程において印刷動作の停止が告知される。よって、印刷データが実際に印刷される際の操作なしに、自動的に印刷動作が停止するとともに、所望のタイミングで、印刷動作が停止したことをユーザに認識させる。

【００１８】請求項６に記載の印刷方法は、請求項５に記載の印刷方法において、前記印刷データを印刷処理するのに要する時間を計算するために必要な情報を記憶する記憶工程と、前記記憶されている情報と前記印刷処理手段の状態とから前記印刷処理に要する時間である印刷時間を計算により予測する印刷時間予測工程と、前記予測された印刷時間と前記指示工程において指示されたタイミングとに基づき前記印刷動作の停止を告知すべき告知時間を算出する告知時間算出工程とを更に、備えるとともに、前記告知工程は、前記算出された告知時間において、前記印刷動作の停止を告知することを特徴とする。

【００１９】請求項６に記載の印刷方法によれば、記憶手段に記憶されている情報と、印刷処理手段の状態とから、印刷時間予測工程において印刷処理に要する印刷時間の予測値が前もって計算される。そして、この印刷時間の予測値と、指示された告知すべきタイミングとに基づいて、印刷動作の停止の告知時間が告知時間算出工程において算出されるとともに、この告知時間が到来すると、告知工程において印刷動作の停止が告知される。よって、印刷時間が実際に印刷処理開始の前に特定され、その印刷時間を基準とした所望のタイミングで、印刷動作が停止したことをユーザに認識させる。

【００２０】請求項７に記載の印刷方法は、請求項５又は請求項６に記載の印刷方法において、前記印刷方法は、前記印刷データを生成する複数のクライアント装置と、前記印刷データを印刷するプリンタがネットワーク

により接続されたシステムにおける印刷方法であって、前記指示工程は、更に、前記印刷動作の停止を告知すべき相手先を予め指示し、当該相手先には前記ネットワークにより接続された特定のクライアント装置のユーザあるいは前記ネットワークの管理者を含むとともに、前記告知工程は、前記指示された相手先に対し前記ネットワークを介して前記印刷動作の停止を告知することを特徴とする。

【００２１】請求項７に記載の印刷方法によれば、ネットワークに接続された特定のクライアント装置のユーザ、あるいはネットワークの管理者を含む相手先が、告知すべき相手先として予め指示工程において指示され、この相手先に対して、ネットワークを介して印刷動作の停止が告知工程において告知される。よって、印刷動作が停止したことを、実際のユーザのみならず、ネットワーク上の他のユーザ、ネットワーク管理者に対しても認識させる。

【００２２】請求項８に記載の印刷方法は、請求項５から請求項７に記載の印刷方法において、前記指示工程は、更に、告知すべき前記印刷動作の停止の理由を予め指示するとともに、前記告知工程は、前記印刷動作の停止を告知するに際し、前記指示された停止の理由を併せて告知することを特徴とする。

【００２３】請求項８に記載の印刷方法によれば、印刷動作の停止の理由が予め指示工程において指示され、印刷動作の停止の告知の際、併せて当該停止の理由が告知工程において告知される。よって、印刷動作が停止したことを、その停止の原因とともに、ユーザ等に対して認識させる。

【００２４】請求項９に記載の印刷制御プログラムが記録された記録媒体は、印刷すべき印刷データを印刷処理する印刷処理手段を備えた印刷システムに含まれるコンピュータを、前記印刷データの印刷要求に際し、当該印刷データの印刷処理の開始時又は終了時に前記印刷処理手段の印刷動作の停止を予め指示するとともに、当該印刷動作の停止を告知するタイミングを指示する指示手段、及び、前記指示手段により指示されたタイミングにて、当該印刷動作の停止を告知する告知手段、として機能させることを特徴とする。

【００２５】請求項９に記載の印刷制御プログラムが記録された記録媒体を読み取り実行するコンピュータによれば、印刷データの印刷要求の際に、当該印刷データの印刷処理の開始又は終了する時に、印刷処理手段の印刷動作を停止するべく予め指示手段により指示がされ、併せてその停止を告知するタイミングも指示される。そして、告知すべきタイミングが到来すると、告知手段により印刷動作の停止が告知される。よって、印刷データが実際に印刷される際の操作なしに、自動的に印刷動作が停止するとともに、所望のタイミングで、印刷動作が停止したことをユーザに認識させる。

【００２６】請求項１０に記載の印刷制御プログラムが記録された記録媒体は、請求項９に記載の印刷制御プログラムが記憶された記憶媒体において、前記コンピュータを、前記印刷データを印刷処理するのに要する時間を計算するために必要な情報を記憶する記憶手段、前記記憶されている情報と前記印刷処理手段の状態とから前記印刷処理に要する時間である印刷時間を計算により予測する印刷時間予測手段、及び、前記予測された印刷時間と前記指示手段により指示されたタイミングとに基づき前記印刷動作の停止を告知すべき告知時間を算出する告知時間算出手段として更に、機能させるとともに、前記告知手段は、前記算出された告知時間において、前記印刷動作の停止を告知することを特徴とする。

【００２７】請求項１０に記載の印刷制御プログラムが記録された記録媒体を読み取り実行するコンピュータによれば、記憶手段に記憶されている情報と、印刷処理手段の状態とから、印刷時間予測手段により印刷処理に要する印刷時間の予測値が前もって計算される。そして、この印刷時間の予測値と、指示された告知すべきタイミングとに基づいて、印刷動作の停止の告知時間が告知時間算出手段により算出されるとともに、この告知時間が到来すると、告知手段により印刷動作の停止が告知される。よって、印刷時間が実際に印刷処理開始の前に特定され、その印刷時間を基準とした所望のタイミングで、印刷動作が停止したことをユーザに認識させる。

【００２８】請求項１１に記載の印刷制御プログラムが記録された記録媒体は、請求項９又は請求項１０に記載の印刷制御プログラムが記憶された記憶媒体において、前記印刷システムは、前記印刷データを生成する複数のクライアント装置と、前記印刷データを印刷するプリンタがネットワークにより接続されたシステムであって、前記指示手段は、更に、前記印刷動作の停止を告知すべき相手先を予め指示し、当該相手先には前記ネットワークにより接続された特定のクライアント装置のユーザあるいは前記ネットワークの管理者を含むとともに、前記告知手段は、前記指示された相手先に対し前記ネットワークを介して前記印刷動作の停止を告知することを特徴とする。

【００２９】請求項１１に記載の印刷制御プログラムが記録された記録媒体を読み取り実行するコンピュータによれば、ネットワークに接続された特定のクライアント装置のユーザ、あるいはネットワークの管理者を含む相手先が、告知すべき相手先として予め指示手段により指示され、この相手先に対して、ネットワークを介して印刷動作の停止が告知手段により告知される。よって、印刷動作が停止したことを、実際のユーザのみならず、ネットワーク上の他のユーザ、ネットワーク管理者に対しても認識させる。

【００３０】請求項１２に記載の印刷制御プログラムが記録された記録媒体は、請求項９から請求項１１に記載

の印刷制御プログラムが記憶された記憶媒体において、前記指示手段は、更に、告知すべき前記印刷動作の停止の理由を予め指示するとともに、前記告知手段は、前記印刷動作の停止を告知するに際し、前記指示された停止の理由を併せて告知することを特徴とする。

【００３１】請求項１２に記載の印刷制御プログラムが記録された記録媒体を読み取り実行するコンピュータによれば、印刷動作の停止の理由が予め指示手段により指示され、印刷動作の停止の告知の際、併せて当該停止の理由が告知手段により告知される。よって、印刷動作が停止したことを、その停止の原因とともに、ユーザ等に対して認識させる。

【００３２】

【発明の実施の形態】次に、本発明に好適な実施の形態について図面に基づいて説明する。なお、以下に説明する実施の形態は、複数のコンピュータが、データサーバ等の一のデータ変換器を介してプリンタに接続された印刷システムにおいて、各コンピュータにより当該プリンタを共同使用する場合の出力制御に対して本発明を適用した場合の実施の形態である。

【００３３】始めに、実施形態の印刷システムの構成について、図１を用いて説明する。

【００３４】図１に示すように、実施形態の印刷システムは、４台のコンピュータ１乃至４と、データ変換器６と、各コンピュータ１乃至４とデータ変換器６を接続する切換器５と、プリンタ７とにより構成されている。

【００３５】この構成において、各コンピュータ１乃至４は、アプリケーションソフトウェア等を用いてプリンタ７において印刷出力すべき印刷データを生成して切換器５に出力する。ここで、上記出力データとしては、例えば、Ａｄｏｂｅ社の「ポストスクリプト」等の周知のページ記述言語により作成される。

【００３６】切換器５は、各コンピュータ１乃至４からの印刷データを一時的に記憶するバッファ部を備え、これらの印刷データをコンピュータ毎に時分割的にデータ変換器６に出力するとともに、データ変換器６から出力されてくる後述の表示データ等を各コンピュータに配信する。

【００３７】データ変換器６は、各コンピュータ１乃至４から切換器５を介して送信されてくる印刷データを、当該データ変換器６が保有する変換データを用いてプリンタ７において印刷出力するための印刷ビットマップデータに展開し、プリンタ７に出力する。

【００３８】プリンタ７は、出力された印刷ビットマップデータに基づき、対応する印刷出力を行う。

【００３９】次に、上記印刷システムを構成する各構成要素の細部構成を図２及び図３を用いて説明する。

【００４０】まず、コンピュータ１乃至４の構成及び動作について、図２（ａ）を用いて説明する。なお、各コンピュータ１乃至４の構成及び動作は同様であるので、以下の説明では、代表してコンピュータ１について説明する。

【００４１】図２（ａ）に示すように、コンピュータ１は、ＲＯＭ１３に記憶されたプログラムを読み出してそれに含まれている各命令を実行するＣＰＵ１０と、キーボード、マウス等よりなる入力部１１と、ネットワーク接続部１２と、ＲＯＭ（ReadOnly Memory）１３と、ＲＡＭ（Random Access Memory）１４と、各種情報を表示するディスプレイ１５と、バス１６とにより構成されている。

【００４２】上記の構成において、ネットワーク接続部１２は、切換器５に接続されており、コンピュータ１から出力するデータ及びコンピュータ１に入力するデータに対していわゆるインターフェース動作を行う。

【００４３】入力部１１は、コンピュータ１における処理に必要なデータが入力されたときそれをバス１６を介してＣＰＵ１０等に出力する。

【００４４】ＲＯＭ１３は、コンピュータ１全体の制御用のプログラムを記憶している読み出し専用のメモリであり、所定のタイミングで必要なプログラムを読み出して、バス１６に出力する。

【００４５】ＲＡＭ１４は、実際には、ハードディスク装置等の記憶装置等により構成され、ＣＰＵ１０における各種制御プログラムがインストールされているとともに、ＣＰＵ１０における処理に必要なデータ等を一時的に記憶し、必要に応じてバス１６に出力する。

【００４６】ディスプレイ１５は、ＣＰＵ１０における処理に必要な表示を行うとともに、後述の表示データＳａに対応する画像及び後述の処理時間を表示する。

【００４７】ＣＰＵ１０は、ＲＡＭ１４に記憶されているプログラムを用いて各種演算処理、あるいは上述の各構成要素の制御を行う。

【００４８】次に、プリンタ７の構成及び動作について、図２（ｂ）を用いて説明する。

【００４９】図２（ｂ）に示すように、プリンタ７は、ＣＰＵ１７と、ネットワーク接続部１８と、ＲＯＭ１９と、ＲＡＭ２０と、出力エンジン２１と、バス２１ａとにより構成されている。

【００５０】この構成において、ネットワーク接続部１８は、データ変換器６に接続されており、プリンタ７に入力される当該プリンタ７において印刷出力すべき印刷ビットマップデータに対してインターフェース動作を行う。

【００５１】ＣＰＵ１７は、プリンタ７を構成する各構成要素を制御し、当該印刷ビットマップデータの印刷出力を行う。

【００５２】ＲＯＭ１９は、プリンタ７全体の制御用のプログラムを記憶しているメモリであり、所定のタイミングで必要なプログラムを読み出して、バス２１ａに出力する。

【００５３】ＲＡＭ２０は、ＣＰＵ１７における処理に必要なデータ等を一時的に記憶し、必要に応じてバス２１ａに出力する。

【００５４】出力エンジン２１は、インクジェット方式又は電子写真方式等の印刷部を備えており、実際の印刷ビットマップデータの印刷出力処理を行う。

【００５５】次に、データ変換器６の構成及び動作について、図３を用いて説明する。

【００５６】図３に示すように、データ変換器６は、インターフェース２２ａ及び２２ｂと、ＲＯＭ３６に記憶されているプログラムを読み出して実行するＣＰＵ２３と、ＲＯＭ３６と、ＲＡＭ２４と、ビットマップデータ生成部２５と、表示データ生成部２６と、バス２７と、変換データＲＯＭ３５とにより構成されている。

【００５７】更に、ビットマップデータ生成部２５はＣＰＵ２５ａ、ＲＯＭ２５ｂ、ＲＡＭ２５ｃからなる論理演算回路を内蔵しており、表示データ生成部２６はＣＰＵ２６ａ、ＲＯＭ２６ｂ及びＲＡＭ２６ｃからなる論理演算回路を内蔵している。ここで、ＲＯＭ２５ｂは印刷ビットマップデータ生成のためのプログラムを記憶しており、ＲＯＭ２６ｂはＣＰＵ２６ａが表示データ生成部２６を制御する際に必要なプログラムを記憶している。

【００５８】この構成において、インターフェース２２ａは、切換器５を介した各コンピュータ１乃至４からのデータに対してインターフェース動作を行い、バス２７に出力する。

【００５９】ＣＰＵ２３は、データ変換器６全体を制御するとともに、各コンピュータ１乃至４から送信されてくる後述の要求信号Ｓｒに基づいて、生成された後述の印刷ビットマップデータのプリンタ７への出力及び生成された後述の表示データＳａの切換器５を介しての各コンピュータ１乃至４への出力を行う。更に、ＣＰＵ２３は、後述の処理により、後述の所要時間を算出してコンピュータ１乃至４に送信する。

【００６０】ＲＡＭ２４は、データ変換器６に入力されてきた各コンピュータ１乃至４からの印刷データＳｂ等を一時的に記憶し、必要に応じてバス２７に出力する。また、後述のビットマップデータ生成部２５において生成された印刷ビットマップデータを一時的に記憶し、バス２７を介してプリンタ７に出力するとともに、後述の表示データ生成部２６において生成された表示データＳａを一時的に記憶し、バス２７を介してプリンタ７にコンピュータ１乃至４に出力する。

【００６１】ＲＯＭ３６は、データ変換器６全体の制御用のプログラムを記憶している読み出し専用のメモリであり、所定のタイミングで必要なプログラムを読み出して、バス２７に出力する。

【００６２】変換データＲＯＭ３５は、コンピュータ１から入力された印刷データＳｂ（ページ記述言語で作成されたページ記述データ）を印刷ビットマップデータに変換するための変換データを記憶しているＲＯＭであり、当該変換データは、ビットマップデータ生成部２５と表示データ生成部２６において共用される。そして、具体的な変換データとしては、印刷データＳｂ内の個々の指令コードを解釈して図形等の描画を行うための変換規則データ３５ｂと印刷データＳｂに含まれるいわゆるキャラクタコードに対応するフォントデータ３５ａとを含み、これらが必要に応じて読み出される。

【００６３】ビットマップデータ生成部２５は、各コンピュータ１乃至４からの印刷データＳｂをプリンタ７において印刷出力するための印刷ビットマップデータに展開加工し、ＲＡＭ２４に出力する。すなわち、印刷データＳｂ内の指令コードや上記キャラクタコードを読み出し、更に各々に対応する変換規則データ３５ｂ又はフォントデータ３５ａを変換データＲＯＭ３５から読み出して、ＲＡＭ２４内のページメモリ内に、指令コードに対応する図形やキャラクタコードに対応するフォントをビットマップ形式で記憶させる。

【００６４】なお、ビットマップデータ生成部２５における展開加工においては、実際にプリンタ７において印刷出力に使用されるフォント等を含む上記変換データを用いて実際に印刷出力する頁毎に印刷ビットマップデータが生成される。

【００６５】インタフェース２２ｂは、生成された印刷ビットマップデータ等の、プリンタ７における印刷処理に必要なデータに対してインターフェース処理を行い、プリンタ７に出力する。

【００６６】表示データ生成部２６は、各コンピュータ１乃至４から送信されてくる要求信号Ｓｒに対応して、上記印刷データＳｂと上記変換データを用いて後述のプレビュー処理用の表示データＳａを生成する。すなわち、ビットマップデータ生成部２５における印刷ビットマップデータの生成と同様の処理によりビットマップ形式の表示データＳａを生成する。このとき、変換データＲＯＭ３５からの変換データをビットマップデータ生成部２５と共有することとなるので、プリンタ７における実際の印刷出力に忠実な表示データＳａを生成できることとなる。

【００６７】次に、本実施形態に係るプレビュー処理及び印刷処理について、図４に示すフローチャートを用いて説明する。本実施形態のプレビュー処理及び印刷処理においては、プリンタ７において印刷出力すべき印刷データＳｂに忠実な表示データＳａが生成されてディスプレイ１５に表示されるとともに、印刷データＳｂを印刷処理する際の所要時間がＣＰＵ２３により算出されてコンピュータ１乃至４に伝送される。

【００６８】また、以下の説明においては、理解の容易のために、コンピュータ１とデータ変換器６並びにプリンタ７を用いたプレビュー処理及び印刷処理について説明するとともに、コンピュータ１の処理とデータ変換器

６及びプリンタ７の処理とを並行して説明する。更に、以下に説明する実施形態は、印刷データＳｂが入力されてもこれを印刷処理開始まで保存しない構成のデータ変換器６を用いた場合の実施形態である。

【００６９】図４に示すように、実施形態のプレビュー処理及び印刷処理においては、始めに、コンピュータ１において、プリンタ７を用いて印刷出力すべき印刷データＳｂが生成される（ステップＳ１）。

【００７０】そして、プレビュー処理の要求信号Ｓｒとともに、当該生成された印刷データＳｂが切換器５を介してデータ変換器６に対して送信され（ステップＳ２）、当該データ変換器６において受信される（ステップＳ３）。

【００７１】次に、受信した印刷データＳｂを印刷処理する際の所要時間を演算するために用いられる演算補助値がＲＡＭ２４に記憶されているか否かを判定する（ステップＳ４）。そして、当該演算補助値が記憶されているときは（ステップＳ４；ｙｅｓ）当該演算補助値を用いて所要時間を推定演算する（ステップＳ５）。

【００７２】ここで、上記所要時間について説明すると、当該所要時間としては、ビットマップデータ生成部２５における印刷ビットマップデータの生成開始から、それを印刷し終わるまでの時間とするのが望ましい。このため、ステップＳ５による所要時間の算出においては、印刷ビットマップデータの生成に要する時間は、印刷データの内容を解析して算出を行うとともに、印刷ビットマップデータの生成完了から印刷終了までの時間は、印刷ビットマップデータのプリンタ７への伝送までに必要な所要時間の概算値に、印刷サイズに対応した予め実験等により算出されている所定の印刷サイズに比例した時間を加算することで算出する。

【００７３】また、印刷ビットマップデータの生成に要する時間は、後述するステップＳ１０におけるプレビュー処理用の表示データを生成する際の実測値に基づいたものでもよい。この場合、より迅速に所要時間を求めることができる。更に、実際の印刷出力がプリンタ７によって印刷される時間としてもよい。

【００７４】なお、この他に、所要時間として、例えば、ビットマップデータ生成部２５における印刷ビットマップデータの生成開始から生成終了までの時間としてもよいし、また、ビットマップデータ生成部２５における印刷ビットマップデータの生成開始からその印刷ビットマップデータのプリンタ７への転送完了までの時間、又は他の記憶装置等への転送までの時間としてもよい。更に、実際に印刷出力がプリンタ７によって、印刷される時間としてもよい。

【００７５】また、所要時間の始期を、対象となる印刷データに対応する印刷ビットマップデータ生成開始からではなく、当該印刷データがデータ変換器６に送られた時間からとしてもよい。その場合、所要時間は当該印刷データよりも先に処理すべき印刷データの処理に要する時間を上述の所要時間に加算することで算出できる。

【００７６】次に、上記演算補助値について説明すると、当該演算補助値は、同じ印刷データＳｂがデータ変換器６に入力された場合、２回目以降の上記所要時間の演算の際に使用される補助値であり、一つの印刷データＳｂについて一度算出されると、後述のようにＲＡＭ２４内に記憶されているものである。

【００７７】そして、当該演算補助値の具体的な値としては、上記演算された所要時間そのものを当該印刷データＳｂに対応する演算補助値として記憶しておいてもよいし、また、印刷処理に必要な時間のうち、印刷サイズ（拡大率又は縮小率）に比例して変化する時間を単位サイズ（すなわち、印刷データＳｂに対して拡大率１．０で印刷する場合）を印刷する際の時間で除した値（以下、単に「ａ」とする。）と、印刷サイズに依らず一定の時間（以下、単に「ｂ」とする。）とに分けて記憶しておいてもよい。後者の場合には、実際に要する所要時間は、

所要時間＝ａ×（印刷サイズ）＋ｂ

として算出できる。

【００７８】また、プリンタ７で実際に印刷される時間は、長さ方向印刷サイズに比例する時間をｃとして、

所要時間＝ａ×（印刷サイズ）＋ｂ＋ｃ×（長さ方向印刷サイズ）

で算出できる。この値はプリンタ７の印刷速度であり、用紙のローディング等のサイズに依存しない時間はｂに含まれる。

【００７９】ここで、上記印刷サイズに比例して変化する時間としては、例えば、ベクトルデータからビットマップデータへの変換に要する時間やビットマップデータの転送のための時間、或は印刷ビットマップデータをプリンタ７に伝送するための時間等がある。

【００８０】更に、印刷サイズに依らず一定の時間としては、印刷データＳｂの構文解析のための時間や、ベクトルデータの座標変換のための時間等がある。

【００８１】前記説明した方法により所要時間が演算されると（ステップＳ５）、次に、当該所要時間に対応する所要時間情報をコンピュータ１に返信し（ステップＳ８）、コンピュータ１においてこれを受信して当該所要時間をディスプレイ１５に表示等し、ユーザに告知する（ステップＳ９）。

【００８２】一方、ステップＳ４の判定において、演算補助値が記憶されていないとき、すなわち、受信した印刷データＳｂがそれまでプレビュー処理又は印刷処理されたことがない印刷データＳｂであるときは（ステップＳ４；ｎｏ）、次に、当該印刷データＳｂに基づいて、ＣＰＵ２３により上記所要時間を推定演算するとともに上記演算補助値を算出する（ステップＳ６）。そして、当該算出した演算補助値を対応する印刷データＳｂを識

別するための情報とともにＲＡＭ２４に記憶する（ステップＳ７）。

【００８３】なお、演算補助値を記憶するＲＡＭ２４内の領域は、例えば電池等によりバックアップするか、又は不揮発性化することにより、データ変換器６の電源を断としても記憶している演算補助値が消失しないように構成されている。

【００８４】演算補助値の記憶が終了すると、上記ステップＳ８及びＳ９に移行する。

【００８５】次に、データ変換器６において、表示データ生成部２６が、ＲＡＭ２４に記憶されている印刷データＳｂと、上記フォントデータ３５ａ及び変換規則データ３５ｂ等を含む変換データとを用いてディスプレイ１５上に表示すべき表示データＳａを生成（展開）する（ステップＳ１０）。このとき、生成された表示データＳａは、印刷データＳｂを実際に印刷出力するときの態様（字体、文字の大きさ、全体のレイアウト、色配置等の態様）とほぼ同じ態様のビットマップ形式のデータである。

【００８６】そして、生成された表示データＳａをコンピュータ１に送信する（ステップＳ１１）。

【００８７】次に、当該表示データＳａがコンピュータ１において受信されると（ステップＳ１２）、当該表示データＳａに対応する画像、すなわち、印刷データＳｂをプリンタ７において印刷出力するときの態様にほぼ一致した画像（表示データＳａに対応した画像）がディスプレイ１５に表示され、ユーザがこれを確認する（ステップＳ１３）。

【００８８】そして、実際に印刷を実行する際の補助情報（例えば、印刷する際の上記印刷サイズ）の入力がコンピュータ１において実行されると（ステップＳ１４）、次に、コンピュータ１から実際に印刷出力を開始するか否かを示す要求信号Ｓｒとして指示データ（指示コマンド）が印刷データＳｂとともに送信される（ステップＳ１５）。

【００８９】次に、当該指示データ及び印刷データＳｂがデータ変換器６において受信されると（ステップＳ１６）、受信した印刷データＳｂに対応する上記所要時間を演算補助値を用いて演算し（ステップＳ１７）対応する所要時間をコンピュータ１に送信する（ステップＳ１８）。そして、コンピュータ１においては送信された所要時間情報に対応する所要時間を表示してユーザに告知する（ステップＳ１９）。

【００９０】更に、データ変換器６においては、上記ステップＳ１９と並行して、ＲＡＭ２４に記憶されている印刷データＳｂをビットマップデータ生成部２５により印刷ビットマップデータに展開して（ステップＳ２０）プリンタ７に出力し、プリンタ７において出力エンジン２１を用いて印刷を実行する（ステップＳ２１）。

【００９１】そして、印刷出力が終了したらＲＡＭ２４に記憶されている印刷データＳｂを削除して（ステップＳ２２）処理を終了する。

【００９２】なお、上記ステップＳ１９において表示する情報は、上述した所要時間そのものの他に、印刷処理終了までの残り時間に変換して表示してもよいし、予定終了時刻を算出して表示してもよい。更に、所要時間全体に対する経過時間の割合を算出して表示してもよい。更に、これらの表示する情報への変換は、上記ステップＳ１８でもステップＳ１９においても可能である。

【００９３】次に、本実施形態に係る印刷停止通知処理において、コンピュータ１で行われる設定操作について、図５に示すコンピュータ１のディスプレイ１５上の設定画面に基づき説明する。本実施形態においては、実行しようとする印刷処理を印刷開始時あるいは印刷終了時に停止するとともに、所定のタイミングでデータ変換器６から印刷停止の通知を送信する場合、予めコンピュータ１で通知タイミング、通知内容等の設定を行う。この際、コンピュータ１のユーザは、入力部１１におけるキーボード、マウス等を操作することにより、設定内容を入力する。そして、設定内容に従いデータ変換器６において印刷停止及びその通知の処理が行われる。なお、コンピュータ１における前記設定操作は、印刷処理等のアプリケーションソフトウェアの一機能として組み込むことができる。

【００９４】図５に示すように、コンピュータ１のディスプレイ１５上に表示される設定画面は、一時停止の有無、通知タイミング、通知先、通知内容の各設定項目に対して、以下のような設定を行うために表示される。なお、図５の設定画面では、入力項目の１つのみ選択でき、○で表示されるラジオボタン、複数の入力項目を選択でき、□で表示されるチェックボックス、文字列による入力などの入力方法がある。

【００９５】「一時停止」の項目には、印刷の一時停止実行の有無を「する」、「しない」のどちらかを設定することにより選択する。また、印刷停止タイミングとして、「印刷前」、「印刷後」の一方又は両方を設定できる。例えば、特殊な用紙に印刷したい場合は、印刷開始直前にいったんプリンタ７を停止させ、用紙交換を行うために、「印刷前」に設定するが、更に印刷終了時に再度プリンタ７を停止させ、元の用紙に戻すようなケースでは、加えて「印刷後」の設定をしておくことが望ましい。

【００９６】「通知タイミング」の項目には、「印刷開始」又は「印刷終了」の何分前に通知を行うかを数値を入力することにより設定する。ここで、実際の通知は印刷実行の前に送信する必要があるので、実行すべき印刷ジョブの印刷開始時間と印刷終了時間とを、上述した処理に基づき推定演算を行って求め、この値を元に通知を行う実際のタイミングがデータ変換器６により決定される。なお、このデータ変換器６により行われる処理はつ

いては後述する。

【００９７】また、上述した印刷の「一時停止」の設定内容が「印刷前」に設定されていれば、通知タイミングは印刷開始時を基準に何分前であるかを示す数値を入力し、「一時停止」の設定内容が「印刷後」に設定されていれば、通知タイミングは印刷終了時を基準に何分前であるか示す数値を入力する。ここで、入力する数値を「０」とすれば、印刷開始と同時に、あるいは印刷終了と同時に通知が行われるように設定できる。

【００９８】「通知先」の項目には、通知を送信すべき相手先として、コンピュータ１により設定操作を行うユーザである「ユーザ」、ネットワーク上の印刷システムの管理を行う「管理者」、ネットワークを介して通知を伝達可能な他のユーザの連絡先である「指定アドレス」をアドレス情報を示す文字列とともに、それぞれ設定することができる。更に、この３つを自由に組み合わせて設定でき、重複して通知を送信することができる。

【００９９】「通知内容」の項目には、印刷停止の理由として「用紙交換」、「メンテナンス」、及びその他の理由として「指定メッセージ」を任意のメッセージの文字列とともに、それぞれ設定できる。例えば、上述した特殊な用紙への用紙交換を行う場合は「用紙交換」を設定し、プリンタ７のヘッドクリーニングなどを実行する場合は「メンテナンス」を設定すればよい。また、この３種の理由を自由に組み合わせて設定することもできる。なお、ここで設定された通知内容は、通知先に印刷停止の理由を伝えるメッセージとして送信される。

【０１００】以上説明したコンピュータ１の設定操作により設定された各項目のデータは、印刷要求により印刷データをデータ変換器６に送信する際に、印刷データに付加されてデータ変換器６に送信される。なお、設定項目としては上述した各項目に限定されるものではなく、これ以外にも、ユーザのユーザ名、印刷ジョブ名、一時停止実行時間などの項目を追加することが可能である。

【０１０１】次に、本実施形態に係る印刷停止通知処理において、コンピュータ１で設定され、印刷データとともにデータ変換器６に送信される設定データを元に、データ変換器６で生成される通知データの生成処理について、図６に示すフローチャートにより説明する。

【０１０２】図６に示すように、データ変換器６において、受信したコンピュータ１の設定データ内容の判別が順次行われる。まず、設定データにおいて印刷の「一時停止」の設定の有無を判別する（ステップＳ３１）。「一時停止」を「しない」に設定していれば（ステップＳ３１；ＮＯ）、以降の処理は行われず直ちに処理を終了する。

【０１０３】「一時停止」を「する」に設定していれば（ステップＳ３１；ＹＥＳ）、印刷の一時停止が印刷処理の開始時を基準に設定されているか否か判別する（ステップＳ３２）。「一時停止」の設定に付随して入力した印刷の先後を示す設定内容が「印刷前」に設定されていれば（ステップＳ３２；ＹＥＳ）、印刷開始時を基準とした印刷停止の通知時間を計算する（ステップＳ３３）。

【０１０４】ここで、当該通知時間の計算方法を説明する。まず、一時停止の対象となる印刷ジョブの印刷開始時間は、上述したように推定演算されデータ変換器６において記憶されている。更に、この値と受信した設定データのうち印刷開始を起算点とする通知タイミングの時間とを元に求めるべき通知時間の計算が行われる。具体的には、印刷開始時間から上記通知タイミングの時間を減じて求めた値が通知時間としてセットされる。更に、この印刷開始時間は印刷停止時間としてもセットされる。一方、「一時停止」が「印刷前」として設定されていなければ（ステップＳ３２；ＮＯ）、ステップＳ３３の処理は行わない。

【０１０５】次いで、印刷の一時停止が印刷処理の終了時を基準に設定されているか否かを判別する（ステップＳ３４）。「一時停止」が「印刷後」として設定されていれば（ステップＳ３４；ＹＥＳ）、印刷終了時を基準とした印刷停止の通知時間を計算する（ステップＳ３５）。

【０１０６】当該通知時間の計算は、一時停止の対象となる印刷ジョブを、上述した推定演算された印刷終了時間、及び受信した設定データの印刷終了を起算点とする「通知タイミング」の時間の設定値とを元にして行われる。具体的には、印刷終了時間から上記通知タイミングの時間を減じて求めた値が通知時間としてセットされる。更に、この印刷終了時間は印刷停止時間としてもセットされる。一方、「一時停止」が「印刷後」として設定されていなければ（ステップＳ３４；ＮＯ）、ステップＳ３５の処理は行わない。

【０１０７】次いで、印刷の一時停止の理由に対応する処理を、ステップＳ３６からステップＳ４０にかけて行う。

【０１０８】まず、印刷の一時停止の理由が用紙交換であるか否か判別する（ステップＳ３６）。設定データにおいて、「通知内容」を「用紙交換」として設定していれば（ステップＳ３６；ＹＥＳ）、通知データにおける停止理由を示す文字列に「印刷用紙交換」とセットする（ステップＳ３７）。一方、「通知内容」を「用紙交換」として設定していなければ（ステップＳ３６；ＮＯ）、ステップＳ３７の処理は行わない。

【０１０９】その後、印刷の一時停止の理由がメンテナンスであるか否か判別する（ステップＳ３８）。設定データにおいて、「通知内容」を「メンテナンス」として設定していれば（ステップＳ３８；ＹＥＳ）、通知データにおける停止理由を示す文字列に「メンテナンス」とセットする（ステップＳ３９）。一方、「通知内容」を「メンテナンス」として設定していなければ（ステップ

Ｓ３８；ＮＯ）、ステップＳ３９の処理は行わない。

【０１１０】さらに、印刷の一時停止の理由の設定に際し、設定データ中「指定メッセージ」として、入力されたメッセージを示す文字列がある場合は、これを抽出し、通知データにおけるコメントメッセージとする（ステップＳ４０）。

【０１１１】次いで、印刷の一時停止を行ったユーザの印刷データに対する印刷ジョブ名をスプールされている記憶内容を元に読み取り、通知データにおける印刷ジョブ名としてセットする（ステップＳ４１）。この際、印刷ジョブのユーザ名も読み取り、通知データにおけるユーザ名としてセットする次いで、設定データにおいて、印刷の一時停止の「通知先」として設定されている内容から、通知を送信すべきアドレス情報を抽出し、通知データにおける通知先としてセットする（ステップＳ４２）。

【０１１２】最後に、以上の処理の結果生成された通知データを、上述の処理により算出された通知時間の順序に従って並べ換え、登録する（ステップＳ４３）。そして、並べ換えた各データ中、最先の通知データの通知時間の到来を監視し、その通知時間になると、通知データの内容を通知を送信すべき通知先に対し、停止時間、印刷ジョブ名、ユーザ名、停止理由、コメントを含めて送信する。

【０１１３】次に、上述のように登録された通知データが通知先に対し通知メッセージとして送信され、通知先のディスプレイ等で表示される場合の表示例を、図７を用いて説明する。

【０１１４】図７に示すように、通知先において通知メッセージが表示される表示画面は、上述した処理に従い通知データにセットしたデータ内容の中で、必要な項目を表示したものである。なお、通知先に対する通知メッセージの送信は、例えばネットワークを介した電子メールを利用することができる。

【０１１５】図７における具体的な表示項目は、印刷の一時停止を伝える「プリンター一時停止」のメッセージ、「停止時間」、一時停止の対象となる「印刷ジョブ」、その印刷ジョブを実行する「ユーザ」、用紙交換等の「停止理由」、ユーザが入力した「コメント」等の各項目が含まれている。

【０１１６】以上の印刷の一時停止を告知するための通知メッセージの送信と、その表示を行うことにより、通知を受けたユーザ、又は他のユーザは、印刷動作が停止したこと、又は停止すると予測されることを認識することができる。また、印刷動作の停止時間を併せて認識することができる。その上、一時停止の設定を行った当のユーザは、通知を受けることにより、自らの印刷処理が開始又は終了するタイミングをも認識することができる。よって、一時停止の設定を行った当のユーザは、行うべき作業をその準備を含めて的確かつ迅速に行うことができ、他のユーザは、必要以上に印刷停止が長引かないため、各々の印刷ジョブの遅延は最小限にとどまり、通知を受けた他のユーザは、入手した印刷停止に関する情報を踏まえて対応できるので、本実施形態を印刷システムに適用することによって、大きな効果が得られる。

【０１１７】なお、上述の各実施形態においては、データ変換器６とプリンタ７とを別個独立の装置として説明したが、これ以外にも、プリンタそのものに上記データ変換器としての機能を持たせることも可能である。この場合には、本発明に係る動作を示すプログラムを、コンピュータからの印刷データをビットマップデータに展開するための、いわゆるＲＩＰ（Raster Image Processer）プログラムとしてプリンタ内に内蔵するようにすることができる。

【０１１８】また、上述した本発明に係る印刷システムにおける印刷制御プログラムは、ネットワーク上のコンピュータにおいて読み取り可能なＣＤ－ＲＯＭ、フロッピィーディスク等の記録媒体に記録させることが可能である。そして、当該ＣＤ－ＲＯＭ等を用いてコンピュータにおいて印刷制御プログラムをインストールし、実行することにより、本発明の印刷システムが実現される。

【０１１９】

【発明の効果】以上説明したように、請求項１に記載の印刷システムによれば、印刷データの印刷処理に際し印刷動作の停止とその停止の告知タイミングを指示し、告知タイミングになると、印刷動作の停止を告知するようにしたので、何等の操作なしに自動的に印刷動作を停止させ、所望のタイミングで、印刷動作が停止したことをユーザに認識させる。従って、ユーザの負担を軽減し、他のユーザの印刷処理に与える影響を抑えた上で、印刷停止時に適宜の作業を行うことを可能とする。

【０１２０】請求項２に記載の印刷システムによれば、前もって計算した印刷時間の予測値と告知タイミングとに基づいて、印刷動作の停止の告知時間を算出し、この告知時間が到来すると、印刷動作の停止を告知するようにしたので、実際に印刷処理開始の前に特定された印刷時間を基準とした所望のタイミングで、印刷動作が停止したことをユーザに認識させる。従って、ユーザは実際の印刷停止時より早い時期に印刷停止を判断でき、印刷停止時に行うべき作業の準備等をなし得るので、ユーザの負担がより一層軽減される。

【０１２１】請求項３に記載の印刷システムによれば、ネットワーク上の特定のクライアント装置のユーザやネットワークの管理者を、印刷停止の告知の相手先とできるようにしたので、印刷動作が停止したことを、実際のユーザのみならず、ネットワーク上の他のユーザ、ネットワーク管理者に対しても認識させる。従って、印刷停止の情報を広い範囲に渡って報知でき、他のユーザの印刷処理に与える影響をより一層抑えることを可能とする。

【０１２２】請求項４に記載の印刷システムによれば、印刷動作の停止の理由を印刷動作の停止の告知と併せて告知するようにしたので、印刷動作が停止したことを、その停止の原因とともに、ユーザ等に対して認識させる。従って、印刷が停止した際に、印刷停止の原因を踏まえた的確な対処をすることを可能とする。

【０１２３】請求項５に記載の印刷方法によれば、印刷データの印刷処理に際し印刷動作の停止とその停止の告知タイミングを指示し、告知タイミングになると、印刷動作の停止を告知するようにしたので、何等の操作なしに自動的に印刷動作を停止させ、所望のタイミングで、印刷動作が停止したことをユーザに認識させる。従って、ユーザの負担を軽減し、他のユーザの印刷処理に与える影響を抑えた上で、印刷停止時に適宜の作業を行うことを可能とする。

【０１２４】請求項６に記載の印刷方法によれば、前もって計算した印刷時間の予測値と告知タイミングとに基づいて、印刷動作の停止の告知時間を算出し、この告知時間が到来すると、印刷動作の停止を告知するようにしたので、実際に印刷処理開始の前に特定された印刷時間を基準とした所望のタイミングで、印刷動作が停止したことをユーザに認識させる。従って、ユーザは実際の印刷停止時より早い時期に印刷停止を判断でき、印刷停止時に行うべき作業の準備等をなし得るので、ユーザの負担がより一層軽減される。

【０１２５】請求項７に記載の印刷方法によれば、ネットワーク上の特定のクライアント装置のユーザやネットワークの管理者を、印刷停止の告知の相手先とできるようにしたので、印刷動作が停止したことを、実際のユーザのみならず、ネットワーク上の他のユーザ、ネットワーク管理者に対しても認識させる。従って、印刷停止の情報を広い範囲に渡って報知でき、他のユーザの印刷処理に与える影響をより一層抑えることを可能とする。

【０１２６】請求項８に記載の印刷方法によれば、印刷動作の停止の理由を印刷動作の停止の告知と併せて告知するようにしたので、印刷動作が停止したことを、その停止の原因とともに、ユーザ等に対して認識させる。従って、印刷が停止した際に、印刷停止の原因を踏まえた的確な対処をすることを可能とする。

【０１２７】請求項９に記載の印刷制御プログラムが記録された記録媒体を読み取り実行するコンピュータによれば、印刷データの印刷処理に際し印刷動作の停止とその停止の告知タイミングを指示し、告知タイミングになると、印刷動作の停止を告知するようにしたので、何等の操作なしに自動的に印刷動作を停止させ、所望のタイミングで、印刷動作が停止したことをユーザに認識させる。従って、ユーザの負担を軽減し、他のユーザの印刷処理に与える影響を抑えた上で、印刷停止時に適宜の作業を行うことを可能とする。

【０１２８】請求項１０に記載の印刷制御プログラムが記録された記録媒体を読み取り実行するコンピュータによれば、前もって計算した印刷時間の予測値と告知タイミングとに基づいて、印刷動作の停止の告知時間を算出し、この告知時間が到来すると、印刷動作の停止を告知するようにしたので、実際に印刷処理開始の前に特定された印刷時間を基準とした所望のタイミングで、印刷動作が停止したことをユーザに認識させる。従って、ユーザは実際の印刷停止時より早い時期に印刷停止を判断でき、印刷停止時に行うべき作業の準備等をなし得るので、ユーザの負担がより一層軽減される。

【０１２９】請求項１１に記載の印刷制御プログラムが記録された記録媒体を読み取り実行するコンピュータによれば、ネットワーク上の特定のクライアント装置のユーザやネットワークの管理者を、印刷停止の告知の相手先とできるようにしたので、印刷動作が停止したことを、実際のユーザのみならず、ネットワーク上の他のユーザ、ネットワーク管理者に対しても認識させる。従って、印刷停止の情報を広い範囲に渡って報知でき、他のユーザの印刷処理に与える影響をより一層抑えることを可能とする。

【０１３０】請求項１２に記載の印刷制御プログラムが記録された記録媒体を読み取り実行するコンピュータによれば、印刷動作の停止の理由を印刷動作の停止の告知と併せて告知するようにしたので、印刷動作が停止したことを、その停止の原因とともに、ユーザ等に対して認識させる。従って、印刷が停止した際に、印刷停止の原因を踏まえた的確な対処をすることを可能とする。

【図面の簡単な説明】

【図１】本実施形態の印刷システムの構成を示すブロック図である。

【図２】コンピュータ及びプリンタの細部構成を示すブロック図であり、（ａ）はコンピュータの細部構成を示すブロック図であり、（ｂ）はプリンタの細部構成を示すブロック図である。

【図３】データ変換器の細部構成を示すブロック図である。

【図４】本実施形態のプレビュー処理、印刷処理の動作を示すフローチャートである。

【図５】本実施形態の印刷停止通知の設定画面を示す説明図である。

【図６】本実施形態の印刷停止の通知データの生成処理の動作を示すフローチャートである。

【図７】本実施形態の印刷停止の通知先における表示例を示す説明図である。

【符号の説明】

１、２、３、４…コンピュータ
５…切換器
６…データ変換器
７…プリンタ
１０、１７、２３、２５ａ、２６ａ…ＣＰＵ

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１１…入力部
１２、１８…ネットワーク接続部
１３、１９、２５ｂ、２６ｂ、３６…ＲＯＭ
１４、２０、２４、２５ｃ、２６ｃ…ＲＡＭ
１５…ディスプレイ
１６、２１ａ、２７…バス
２１…出力エンジン

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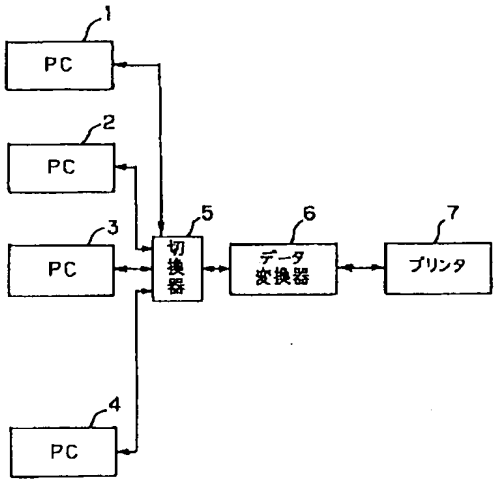
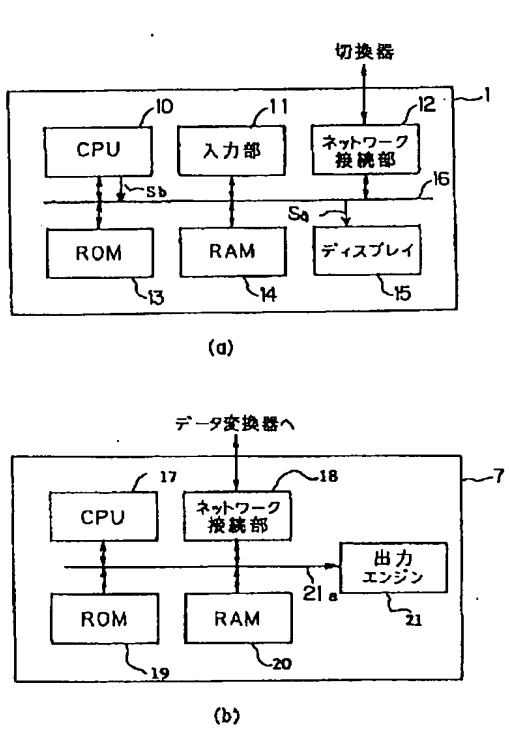
＊２２ａ、２２ｂ…インターフェース
２５…ビットマップデータ生成部
２６…表示データ生成部
３５…変換データＲＯＭ
Ｓａ…表示データ
Ｓｂ…出力データ
＊　Ｓｒ…要求信号

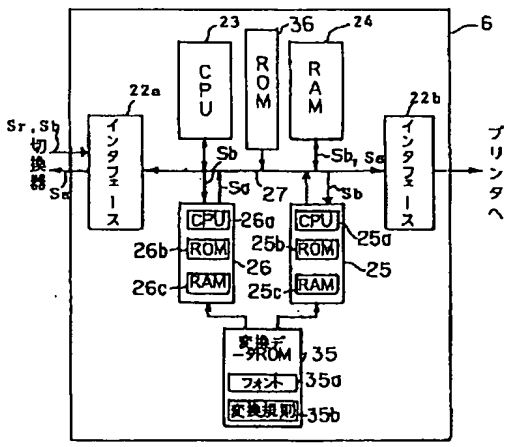
【図１】



【図２】

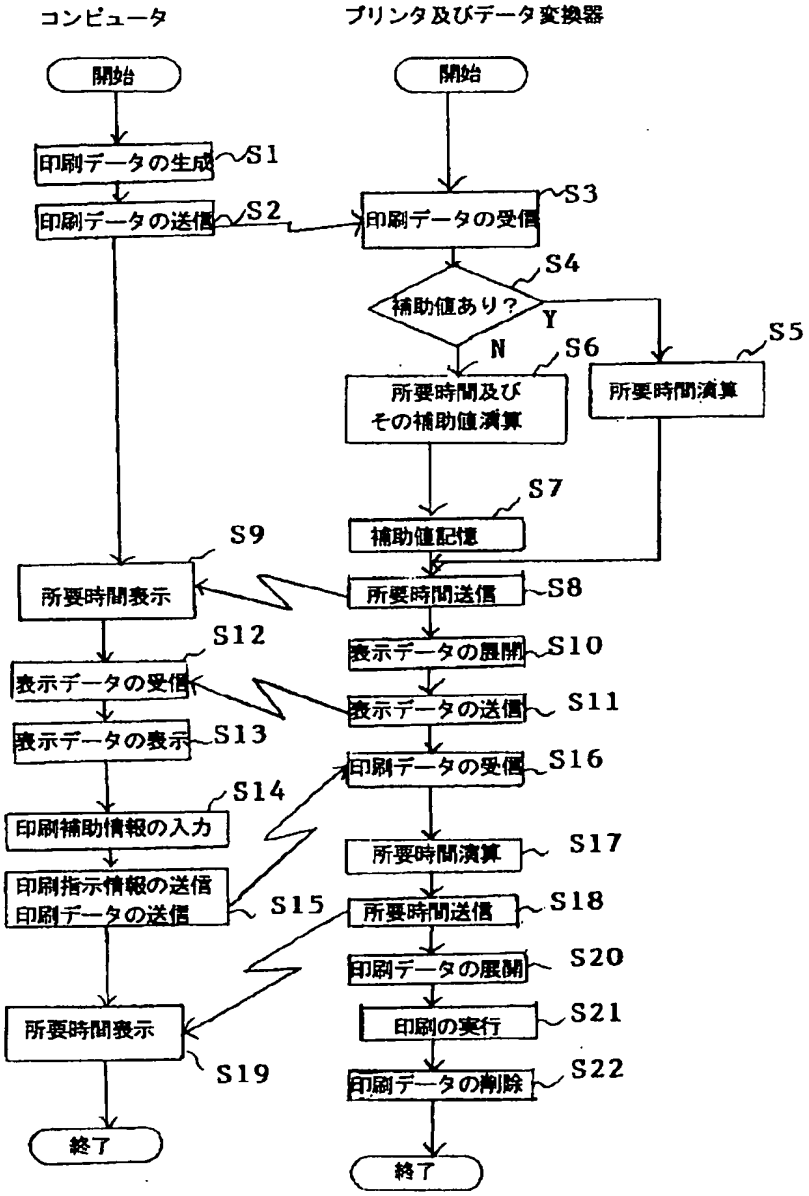


【図３】

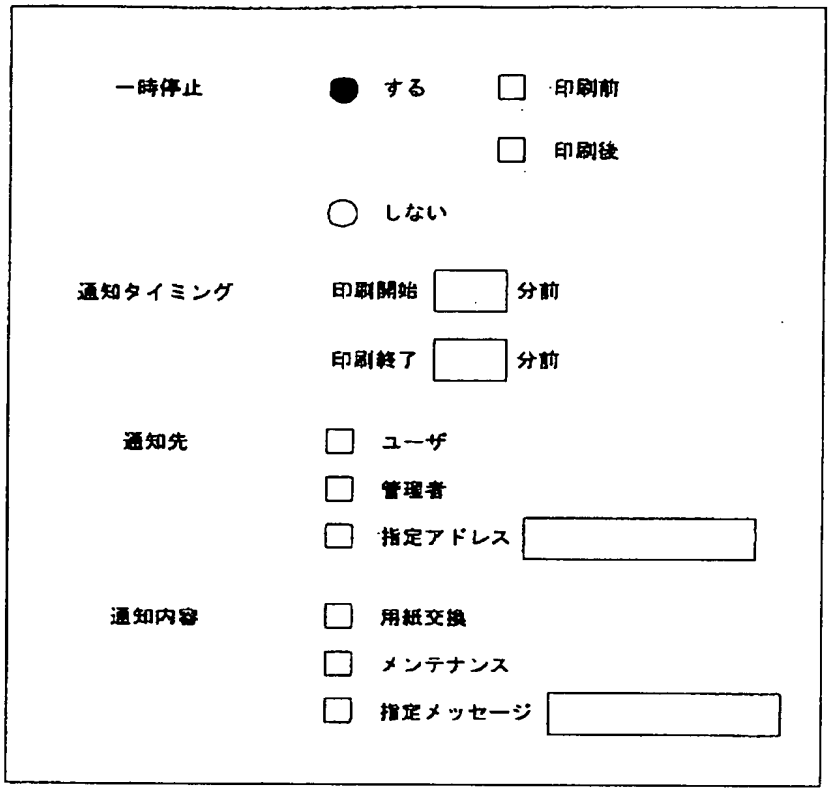


【図４】

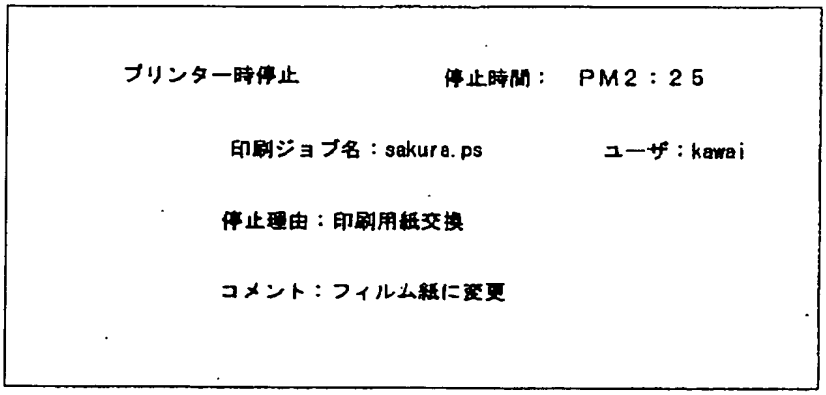
実施形態のプレビュー処理及び印刷処理の動作を示すフローチャート



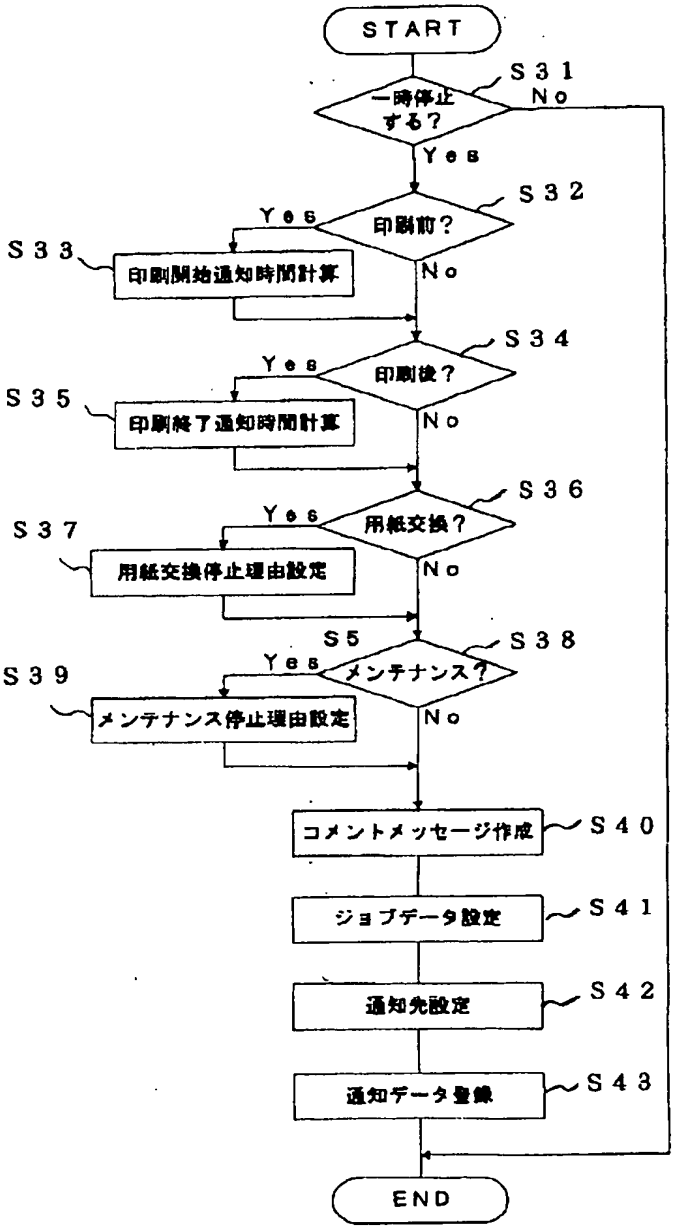
【図５】


一時停止
する
印刷前
印刷後
しない
通知タイミング
印刷開始
分前
印刷終了
分前
通知先
ユーザ
管理者
指定アドレス
通知内容
用紙交換
メンテナンス
指定メッセージ

【図７】


プリンター時停止
停止時間：　PM2：25
印刷ジョブ名：sakura.ps
ユーザ：kawai
停止理由：印刷用紙交換
コメント：フィルム紙に変更

【図６】


START
S31
一時停止する？
No
Yes
S32
印刷前？
Yes
S33
印刷開始通知時間計算
No
S34
印刷後？
Yes
S35
印刷終了通知時間計算
No
S36
用紙交換？
Yes
S37
用紙交換停止理由設定
No
S5
S38
メンテナンス？
Yes
S39
メンテナンス停止理由設定
No
コメントメッセージ作成
S40
ジョブデータ設定
S41
通知先設定
S42
通知データ登録
S43
END